

ARIZONA'S GROUND WATER STANDARDS FOR ORGANIC CHEMICALS, PESTICIDES, PETROLEUM HYDROCARBONS, AND POLYCHLORINATED BIPHENYL (PCBs)	
CONTAMINANT NAME (ABBREVIATION, TRADE OR GENERIC NAME)	AQUIFER WATER QUALITY STANDARDS (µg/L unless stated)
Toluene (TOL)	1000
Toxaphene	3
Vinyl chloride (VC)	2
Xylene (XYL)	10,000

ARIZONA'S GROUND WATER STANDARDS FOR RADIOCHEMICALS, PHYSICAL MEASUREMENTS, AND BACTERIA	
CONTAMINANT NAME (ABBREVIATION, TRADE OR GENERIC NAME)	AQUIFER WATER QUALITY STANDARDS (µg/L unless stated)
Beta particle + photon human-caused radionuclides	4 millirem/year
Gross alpha (include Radium-226, exclude radon and uranium)	15 pCi/L
Radium-226 + Radium-228	5 pCi/L
Strontium-90	4 millirem/year 8 pCi/L in bone marrow
Tritium	4 millirem/year 20,000 pCi/L in total body
Total coliform	0 per 100 ml
Turbidity	1 NTU monthly mean, 5 NTU (if 0 fecal coliform after chlorination), 5 NTU (2-day mean)

Surface water and aquifer protection standards are published in Arizona Administrative Code Title 18, Chapter 11 (R18-11-101 through R18-11-506).

The Status of Water Quality in Arizona – 2004

Arizona's Integrated 305(b) Assessment and 303(d) Listing Report

Reissued July 2005 to include EPA revisions



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The Status of Water Quality in Arizona -- 2004

Arizona's 2004 Integrated 305(b) Assessment and 303(d) Listing Report

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Cover photo: A view of the Gila River above the confluence of the San Francisco River. This ADEQ sample site is located in the Gila Box Riparian National Conservation Area, south of Morenci, Arizona, in the Upper Gila watershed.

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A more comprehensive list of water quality protection programs is provided in the final appendix of this report (**Appendix E**).

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Grand Canyon National Park (520) 638-7905 (John Rihs)
Salt River Project (602) 236-5900 (Greg Elliott)
Southern Nevada Water Authority (702) 258-3948 (Jeff Johnson)
University of Arizona, (520) 626-2386 (Dave Walker)
US Army Corps of Engineers (213) 452-3529 (Robert Stewart)
US Bureau of Land Management/Phoenix (602) 580-5500 (Jim Renthal)
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I. Arizona's 2004 Integrated Assessment and Listing Process

Why do we write this report?

This biennial report consolidates reporting requirements under the federal Clean Water Act sections 305(b) (assessments), 303(d) (impaired waters list), 106 (monitoring), 204 (grants), 319 (nonpoint source), and 314 (lakes program). It incorporates recommendations made in the U.S. Environmental Protection Agency's (EPA) "Guidance for 2004 Assessment, Listing, and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act" issued in July 2003. This report also provides information required in Arizona's TMDL statute (Arizona Revised Statute 49-231 through 49-238) and Impaired Water Identification Rule (Arizona Administrative Code R11-18-601 through 606).

In addition, the Arizona Department of Environmental Quality (ADEQ) recognizes that this report can provide many state and federal agencies, organizations, and interested parties with a current reference document on the status of surface and ground water quality in Arizona. The following objectives are fulfilled by the publication of this water quality assessment report:

- Report on statewide surface and ground water quality in Arizona (excluding tribal lands).
- Identify and delineate all assessed surface waters.
- Identify the status of designated use support for individual surface waters based on numeric or narrative water quality standards.
- Document the basis for ground water and surface water assessment determinations.
- Identify pollutants or water quality characteristics that cause impairment.
- Identify possible sources of pollutants.
- Indicate where standards are exceeded solely due to natural conditions.
- Describe the state's monitoring program and progress toward achieving comprehensive assessments for all surface waters.
- Identify where additional monitoring may be needed to complete assessments (Planning List) or support the development of Total Maximum Daily Load (TMDL) analyses, including a schedule for this monitoring.
- Identify and prioritize where additional TMDLs need to be completed.
- Provide opportunity for public review and respond to comments concerning assessments and the state's 303(d) listing proposals.

This report was written to be useful for both technical and nontechnical audiences. Technical terms, acronyms, and abbreviations used in this document are defined in **Appendix A**.

State TMDL statute and Impaired Water Identification Rule

The 2002 Integrated Assessment and Listing Report marked a significant change in Arizona's assessment and listing processes, due to new state statutes and regulations adopted in 2000.

These statutes and rules regulate the identification of impaired waters and the prioritization and completion of Total Maximum Daily Load (TMDL) analyses. Arizona continues to implement these requirements, described below, in the 2004 report.

A Total Maximum Daily Load Analysis (TMDL)

A TMDL is a written, quantitative plan and analysis to determine the maximum loading on a pollutant basis that a surface water can assimilate and still attain and maintain a specific water quality standard during all conditions. The TMDL allocates the loading capacity of the surface water to point sources and nonpoint sources identified in the watershed, accounting for natural background levels and seasonal variation, with an allocation set aside as a margin of safety.

Total Maximum Daily Load

Statute — Arizona Revised Statute Title 49, sections 231-238 (**Appendix B**), established procedures for identifying impaired waters which require TMDL analyses. For 303(d) listing decisions, the statute requires that ADEQ:

- Adopt, by rule, the methods used to identify "impaired" waters.
- Use only reasonably current, credible, and scientifically defensible data.
- Consider the nature of the water (e.g., ephemeral, intermittent, or perennial) in assessing whether a surface water is impaired.
- Determine whether pollutant loadings solely from naturally occurring conditions are sufficient to exceed a water quality standard, and if so, do not list as "impaired".
- Adopt narrative implementation procedures through a public process before using narrative standards to identify impaired waters. These procedures must identify the objective basis for determining a narrative or biological standard violation.

Impaired Water Identification Rule — ADEQ developed the Impaired Water Identification Rule (R18-11-601 through R18-11-606) (**Appendix B**) as required

in the state statute discussed above. These rules establish the following:

- Criteria for identifying a surface water as impaired and placing it and identified pollutants on the 303(d) List
- Criteria for removing a pollutant or surface water from the 303(d) List
- Criteria for prioritizing the 303(d) listed waters for TMDL development
- "Credible data" criteria
- Data submission and record keeping
- General data interpretation requirements
- Criteria for placing a surface water on the Planning List for further monitoring

Although the Impaired Water Identification Rule regulates the listing of waters only, and does not set requirements on those waters not placed on the 303(d) List or Planning List, ADEQ has chosen to apply the same data interpretation criteria to all waters assessed to maintain consistency of methods. Data that do not meet the "credible data requirements" will not be used to make any assessment, be it "attaining" or "impaired." All data collected by or submitted to ADEQ will be considered and noted in the monitoring tables, but will not be used to make an assessment if credible data requirements are not fulfilled.

Federal guidance and regulations

New Federal Guidance – In July 2003, EPA issued "Guidance for 2004 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act" concerning the development and submission of the 2004 305(b) water quality report and the 303(d) List of impaired waters. This guidance recommended, as it did for the 2002 assessment, that states submit an integrated water quality assessment report that included the state's 303(d) listed waters. Table 1 indicates the information EPA requested, and where this information can be found in this report.

Table 1. EPA requested data or information

Data or Information Requested	Data or Information Provided in This Report
Geographic delineations of each surface water assessed based on the new National Hydrography Dataset.	Arizona will be sending EPA the geographic delineations requested.
Status of and progress toward achieving comprehensive assessments of all waters.	Chapter VI provides an overview of surface water quality assessments and Chapter VII provides an overview of ground water quality assessments. ADEQ's monitoring programs are described in Chapter VIII.
Water quality standard attainment determinations for each surface water assessed.	Detailed monitoring information for each surface water assessed is provided in Chapter IV. Information is arranged by watershed. These tables clearly indicate the basis for each assessment.
Identify additional monitoring that may be needed to determine water quality standard attainment status and, if necessary, to support development of TMDLs.	The assessment tables in Chapter IV and the five category lists in Chapter V indicate whether a surface water will be on the Planning List or TMDL list and the pollutant(s) of concern. Monitoring activities are being developed based on this information.
Schedules for additional monitoring planned for each surface water assessed.	Chapter VIII describes ADEQ's monitoring programs, how these programs are integrated within the agency and with other agencies, and how waters are scheduled through a 5-year watershed monitoring cycle.
Surface waters and pollutants still requiring TMDLs.	Impaired waters which require TMDLs and their pollutants of concern are identified on the Category 5 list in Chapter V.
TMDL development schedules reflecting the priority ranking of each surface water and/or pollutant combination.	A priority ranking and a schedule for completing TMDLs for each pollutant impairing a surface water is provided in Chapter V.
A description of the assessment and listing methodology used to develop Clean Water Act section 303(d) Lists and section 305(b) Assessments.	Chapter III describes the assessment and listing methods used. Appendix B provides a copy of the Impaired Water Identification Rule and Arizona's statute concerning the listing process and TMDL development.
A description of the public participation process involved in developing the 303(d) list.	The public participation process is described in this chapter (Chapter I).

EPA guidance suggests that each surface water assessed is to be placed on one of the following five categories depending on the sufficiency of data and number of exceedances as defined in Arizona's assessment and listing methods (see discussion in Chapter III):

- Category 1. Surface waters are attaining all designated uses.
- Category 2. Surface waters are attaining some designated uses but there are insufficient data to assess the remaining uses.
- Category 3. Surface waters are inconclusive for all designated uses.
- Category 4. Surface waters are assessed as "not attaining" one or more designated use but a Total Maximum Daily Load (TMDL) analysis will not be required for one of the following reasons:
 - 4 A. A TMDL has already been completed and approved by EPA but the water quality standards are not yet being attained.
 - 4 B. Other pollution control requirements are reasonably expected to result in the attainment of water quality standards by the next regularly scheduled listing cycle.
 - 4 C. The impairment is not related to a "pollutant" loading but rather caused by "pollution" (e.g., hydrologic modification).
- Category 5. Surface waters are impaired for one or more designated uses by a pollutant and require development of a TMDL.

Note that federal regulations require that waters assessed as "threatened" be placed in Category 5. For this assessment, no waters were assessed as "threatened." Procedures for trend analysis to determine waters that are threatened will need to be developed through a public process before these listings can be made.

Federal Regulations – Impaired water listing requirements are also established in federal regulations (40 Code of Federal Regulations parts 122, 124, and 130.7). These regulations were applied in this assessment.

Changes in the assessment process

A few significant changes, summarized below, have been made to ADEQ's water quality assessment process since the last report in 2002.

Application of Chronic Standards – The 2004

assessment is the first one where ADEQ has made 303(d) listings for chronic Aquatic and Wildlife standards using the requirements of the Impaired Water Identification Rule (**Appendix B**, R18-11-605.D.2.b). In accordance with the rule, a surface water is assessed as "impaired" if more than one exceedance of an Aquatic and Wildlife chronic water quality standard occurs. Although a geometric mean of the last four samples must be taken to apply the standard for enforcement purposes, the Impaired Water Identification Rule requires only two exceedances to be placed on the 303(d) List, with no application of a geometric mean.

Acute and Chronic Standards

Some water quality parameters have both an "acute" and a "chronic" standard (**Appendix C**). Acute standards are set at higher concentrations than chronic standards to protect aquatic life and wildlife from short-term exposures to the parameter of concern. Chronic standards are set at lower concentrations than acute standards to protect aquatic life and wildlife from effects of long-term exposure.

Turbidity and the New Suspended Sediment Concentration Standard – Arizona repealed its turbidity standard in March of 2002 and adopted a suspended sediment concentration (SSC) standard of 80 mg/L, expressed as a geometric mean with a four sample minimum, to protect Aquatic and Wildlife designated uses. As established in Arizona's Impaired Water Identification Rule (**Appendix B**), more than one exceedance of this geometric mean standard would result in an assessment of "impaired." One exceedance would be assessed as "inconclusive."

The new suspended sediment concentration standard is only applicable to samples collected at or near base flow, which the U.S. Geological Survey (USGS) defines as "flow sustained largely by ground water discharge." Precipitation events and most runoff must be excluded. To apply this standard for assessment purposes, it is necessary to calculate base flow for each site, which requires a large amount of flow data. Therefore, an assessment of SSC was usually possible only at or near USGS gaging stations, where an abundance of current and historical flow data is available. SSC assessment methods are explained in Chapter III.

Since the SSC standard was just recently adopted in 2002, a minimal amount of data were available for this assessment. Thus, ADEQ has continued to assess the turbidity standard repealed in 2002 in an effort to record potential suspended sediment problems. Additionally, these exceedances provide evidence of a potential narrative bottom deposit standard violation. The standard was assessed according to the methods described in Chapter III, and waters were either assessed as "attaining" or "inconclusive" due to turbidity. No 303(d) listings were made based on this parameter, since the standard was repealed. Any waters that would have been impaired or inconclusive under the former standard were called "inconclusive" and placed on the Planning List for further study.

EPA placed three stream reaches on the 303(d) List, citing exceedances of the former turbidity standard as evidence of a narrative standard violation. ADEQ cannot make 303(d) listings based on narrative standards violations until narrative standard implementation procedures are adopted (procedures are currently being developed). A table showing all waters with significant turbidity and/or SSC exceedances appears in Chapter VI.



An ADEQ staff member, standing in a dry streambed, surveys the effects of erosion on Beaver Creek, located near Sprucedale, Arizona. Erosion of stream banks is a major contributor of suspended sediment in surface water.

How is the assessment and listing approved?

The Arizona 2004 303(d) Submission to EPA – In accordance with Arizona Revised Statute (49-232.A), the proposed 303(d) List is submitted to EPA following public review and publication of the list and response to comments in the Arizona Administrative Register. The 303(d) List is due to EPA on April 1st of each even-numbered year. This report is available at ADEQ's web site in Adobe PDF format at: www.azdeq.gov.

The table showing Category 5 surface waters is the list of impaired waters that is submitted to EPA. The list identifies, by surface water segment, the pollutants or surface water characteristics not meeting surface water quality standards. EPA must approve this list and has the authority to add or remove surface waters from the list based on the federal Clean Water Act, regulations, or policies. Therefore, the list shown in this report can be modified by EPA. If changes are made, ADEQ will then provide a revised list on its internet site: www.azdeq.gov.

Public Participation in Arizona's Listing Process – Communicating with the public and promoting public input into the 303(d) listing process is an integral component of ADEQ's water quality management programs. A 30-day public review of the draft Integrated Report is provided. A copy of the report is posted on ADEQ's web site, notices are placed in six local newspapers throughout the state (Phoenix, Tucson, Flagstaff, Sierra Vista, Yuma, and St. Johns), and flyers concerning the public review are mailed to a list of interested persons. Copies of the draft report are available on CD, in hard copy, or as an electronic download from the Internet.

Arizona's TMDL statute provides that any party who submits written comments on the draft list may challenge a surface water listing. Any challenged listing is not included on the initial submission to EPA, but may be subsequently submitted if the listing is upheld in the director's final administrative decision.

The response to comments and the draft 303(d) List are published in the Arizona Administrative Register, according to Arizona Revised Statute 49-232. Publication of the list in the Arizona Administrative Register is an appealable agency action and may be appealed by any party that submitted written comments on the draft list. When a notice of appeal of a listing occurs within the 45-day publication period in the Arizona Administrative Register, these listings are not included in ADEQ's initial submission to EPA until the listing is upheld by ADEQ's Director or if the challenge is withdrawn.

EPA List Approval Process -- Within 30 days of receipt of a completed listing package, EPA must act on a state's list and priority ranking. EPA may approve or disapprove the entire list or disapprove only deficient portions.

If it disapproves a portion, EPA must identify corrections (i.e., surface waters, pollutant(s), priority rankings) needed to make the list consistent with EPA regulations. EPA must also initiate another public review and comment period. The agency publishes its intended revisions in the *Federal Register*, newspaper notices, and other methods of notifying interested parties. At the end of the comment period, EPA evaluates public comments and compiles a revised list. This corrected list is sent back to ADEQ to be incorporated into the water quality management plans and used as Arizona's approved 2004 303(d) List.

In 2004, EPA partially approved and partially disapproved ADEQ's list of impaired waters. The agency added 19 waterbodies to the list, as well as eight additional pollutants to surface waters already on the list. This revised final report includes all of EPA's additions.

EPA Action on the Methods -- Arizona's Impaired Water Identification Rule (Appendix B) establishes Arizona's 303(d) listing methods. EPA provided comments on the rule in 2002 when it was developed. Although EPA does not have authority to approve this rule, EPA considers the methods it establishes when it reviews the 303(d) List Arizona submits. As described above, EPA may cite any deficiencies it raised in comments as a factor in a decision to disapprove all or part of Arizona's 303(d) List.

After EPA's final action is taken, ADEQ posts the final 2004 303(d) List on its website. Copies of the 2002 303(d) List (the current list, until EPA approves the 2004 list) are downloadable from the ADEQ web site in Adobe PDF format at: www.azdeq.gov.



An ADEQ staff member prepares to sample Willow Creek, north of Hannagan Meadow, on a snowy day in eastern Arizona.

II. Arizona's Unique Hydrology

Arizona's ecologic, hydrologic, and geographic diversity

Arizona is a large state with diverse ecological and geological conditions. Its geographical extent is equivalent to the combined size of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, and New York. All four of the deserts of North America occur in Arizona, along with three mountain ranges at or above 10,000 feet in elevation. An atlas of information (Table 2) provides statistics concerning population, land ownership, rainfall, and temperature in Arizona.

Ecoregions – Ecoregions (Figure 1) identify areas of relatively homogeneous ecological systems. These areas were delineated on a national scale based on geology, natural vegetation, and soils. Arizona contains portions of five of the 76 ecoregions recognized in the United States (Omernik, 1987).

Ecoregions in Arizona

Arizona/New Mexico Mountains – low to high mountains with grazed forests and woodlands.

Arizona/New Mexico Plateau – tablelands with considerable to very high relief and plains with high mountains. The Plateau is differentiated from the Colorado Plateau by its semi-humid grassland.

Colorado Plateau – tablelands with considerable to very high relief, plains with high mountains, grazed open woodland, and some irrigated agriculture.

Southern Basin and Range – desert valleys with desert shrubland associations, separated by low mountains.

Southern Deserts – desert shrubland associations on desert plains, with abrupt high mountains providing "sky islands" containing higher elevation ecosystem communities.

Hydrologic Provinces – The U.S. Geological Survey has also divided the state into three physiographic and hydrographic provinces based on the occurrence of water, geology, and altitude (Anderson et al., 1992) (Figure 2).

Hydrologic Provinces in Arizona

Basin and Range – broad, gently sloping valleys, separated by sharply rising mountain ranges ("sky islands") receive more precipitation than the desert lowlands (20 inch annual average at Chiricahua National Monument, compared to 4-12 inches annually in the low deserts). The basins are filled with several thousand feet of sediments overlain with stream alluvium. This alluvium forms the most productive aquifers in Arizona, from which approximately 97% of all ground water is pumped (Wilson, 1991). Depths to ground water range from land surface near perennial streams to as much as 1,300 feet below land surface near the mountain front.

Central Highlands – is a geologic and physiographic transition between the other two provinces. The type and distribution of aquifers vary, with alluvial aquifers occupying relatively small basins, aquifers in consolidated sedimentary rocks, and fractured aquifers in hard rocks. Most perennial streams in the state originate in this province, which receives the highest annual precipitation (16-32 inches).

Plateau Uplands – underlain by extensive consolidated sedimentary rock formations. Most of the ground water in this province is withdrawn from these formations more than 1000 feet deep, although localized alluvial aquifers also provide some ground water. This province has annual precipitation ranging from 10-25 inches. The eastern half is a barren plateau, with isolated alluvial deposits occurring only as narrow strips along large drainages, while the western half (north of the Grand Canyon) is wooded plateaus and mountain peaks which rise higher than 8,000 feet in elevation.

Population – The 2000 census data indicates that most of Arizona's population (60%) is located in the Phoenix metropolitan area. Since 1990 the state's population has increased 40%, with the Phoenix area growing from 2,120,000 to 3,252,000 (45%).

Table 2. Arizona atlas

Population	5,131,000 people (2000 Census) (40% increase since 1990) Phoenix metro area 3,252,000 (14 th largest metro area in the US) Tucson metro area 844,000 Yuma metro area 160,000 Flagstaff metro area 122,366	
Surface Area	113,635 square miles	
Population Density (average)	45 persons per square mile (US density is 80 persons per square mile)	
Land Ownership	28% Indian Lands 17% Bureau of Land Management 17% Individual and Corporate 15% Forest Service 13% State of Arizona 10% Other federal, county, municipal	
Elevation Variation	Highest point	12,630 feet above sea level (Humphrey's Peak)
	Lowest point	70 feet above sea level (near Yuma)
Annual Long-term Average Precipitation^(a)	Lowest	3 inches (Yuma)
	Highest	27 inches (McNary)
	Phoenix metro	7 inches
Temperature^(a)	Average Daily: Highest 88 °F (Yuma) Lowest 45 °F (Flagstaff) Record temperatures: Highest 128 °F (Lake Havasu City) Lowest -40 °F (Hawley Lake)	
Average Annual Withdrawal (acre-feet) ^(b)	Ground Water	4,264,000 acre-feet (1971-1990)
	Surface Water	2,961,000 acre-feet (1971-1990)
Approximate Acres of Riparian Areas^(c)	266,786 acres located on 3,530 miles of perennial streams 165,000 acres located on 10,000 miles of intermittent streams	

^(a) Arizona Climatological Laboratory, 1994 (verbal communication)

^(b) Arizona Department of Water Resources, 1994.

^(c) Arizona Game and Fish Department, 1993 (perennial streams), 1997 (intermittent streams).

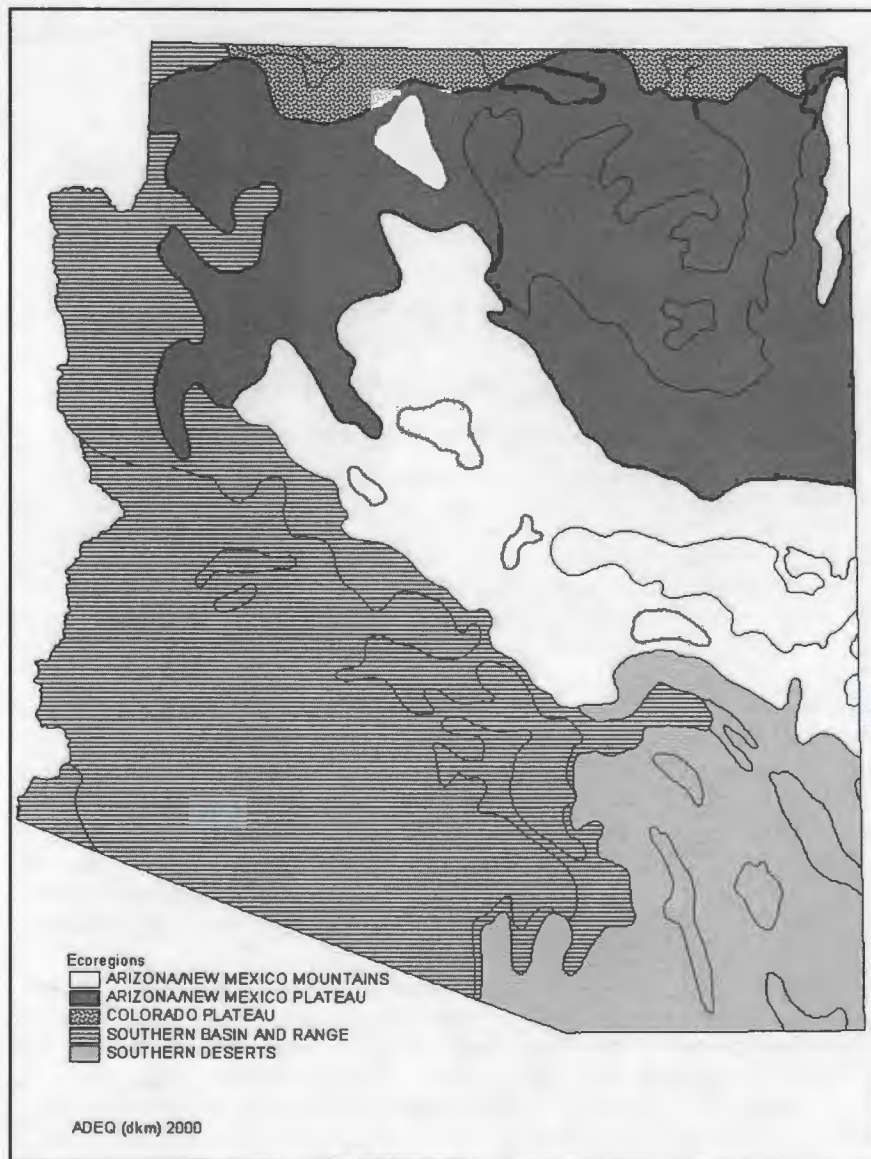


Figure 1. Arizona's ecoregions

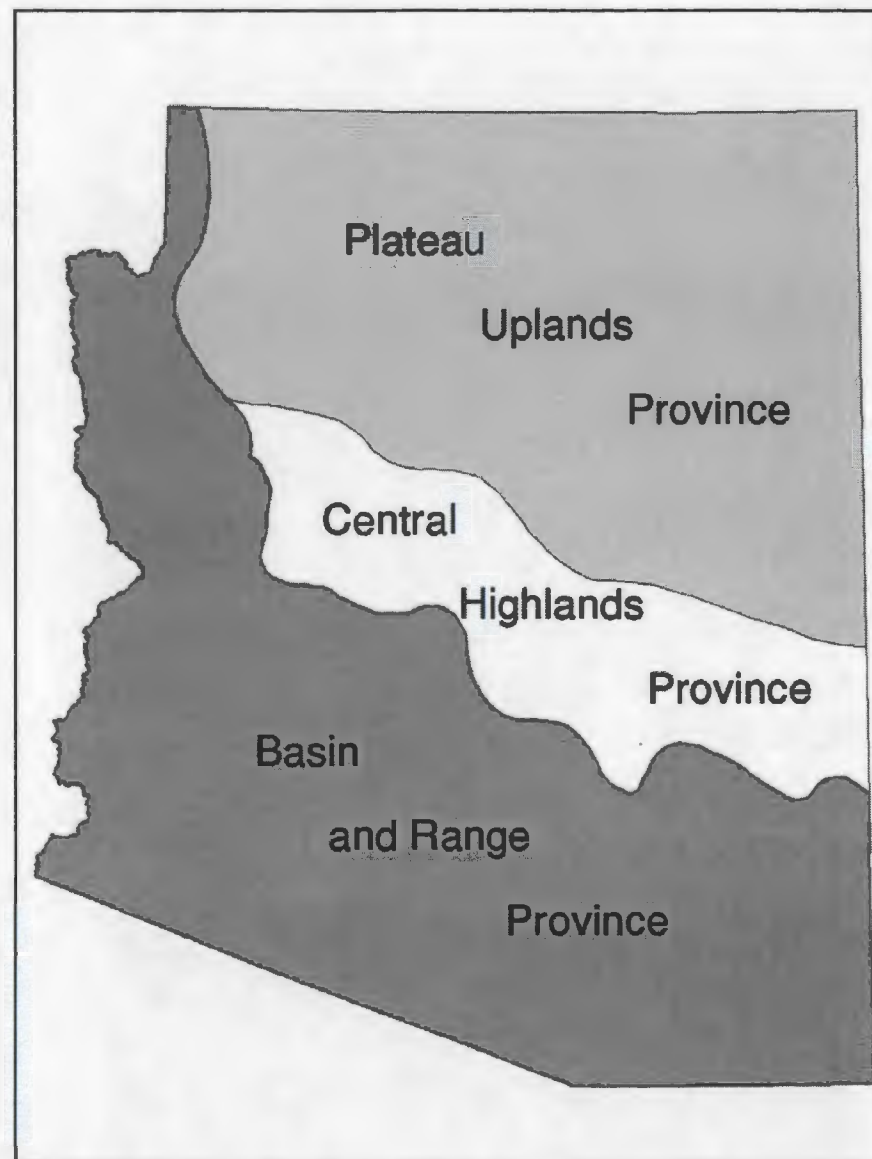


Figure 2. Arizona's hydrologic provinces

Land Ownership – Only 17% of the land within Arizona is privately owned, while the remainder is owned by federal and state agencies and Indian Nations (Table 2 and Figure 3). Land ownership can suggest land uses. For example, urban areas of population growth are generally restricted to privately owned lands, and irrigated agriculture primarily is associated with private and Indian lands. On the other hand, some activities such as mining and grazing are widespread across all types of ownership.

A significant part of the state (28%) is owned by Indian Nations (Table 2 and 3). Some of the maps in this report indicate where Tribal lands occur. Although waters on Indian lands are not assessed in this report, these waters are an integral part of the state's water resources. Some of the Indian Nations publish their own water quality assessment reports which should be read in conjunction with this report to understand water quality conditions across Arizona.

Hydrologic Flow and Climate— Many of Arizona's streams are not perennial (do not contain water year round), but instead flow only part of the year (intermittent flow), or only in response to precipitation (ephemeral). An estimate of Arizona's water resources is provided in Table 2. A map of streams with perennial flow (Figure 4) was created based on riparian area research by the Arizona Game and Fish Department (AGFD 1993 and 1997). This map illustrates generalized conditions but more research is needed in most watersheds to accurately depict hydrologic flow conditions.

The ephemeral and intermittent nature of Arizona's streams is largely due to climatic conditions, particularly precipitation and temperature (Figure 5 and 6). However, ground water pumping, diversions into canals, and the creation of reservoirs has also had a significant influence on the amount of water in Arizona's streams.

Stream Flow Classification

Perennial: Flows continuously throughout the year.

Intermittent: Flows continuously only at certain times of the year, as when it receives water from a spring or from another surface source such as melting snow (i.e., seasonal).

Ephemeral: Channel is at all times above the water tables, and flows only in direct response to precipitation.



A view of the Gila River near Duncan, Arizona in May of 2000 shows a nearly dry stream bed with no flowing water.



A view of the same site in October of 2002 shows a significant amount of flow. These variations are common to most Arizona streams.

Table 3. An estimate of Arizona's water resources

WATERSHED NAME	STREAMS (miles)						LAKES (acres)				Ground water ESTIMATED* STORAGE (acre-feet)
	Non-Indian Land			Indian Land			Non-Indian Land		Indian Land		
	Perennial	Intermittent	Ephemeral	Perennial	Intermittent	Ephemeral	Perennial	Non-perennial	Perennial	Non-perennial	
Bill Williams	185	655	5035	0	0	0	1,832	11,950	0	0	32,500,000
Colorado-Grand Canyon	480	260	14,870	125	5	3,740	68,398	13,412	389	0	509,500,000
Colorado-Lower Gila	375	145	13,545	75	0	535	36,866	0	244	0	272,300,000
Little Colorado-San Juan	640	1,655	9,635	305	170	15,310	16,051	6,831	5,295	118	413,000,000
Middle Gila	165	1,210	5,460	0	10	1,105	10,318	55,746	240	0	222,410,000
Salt	510	1,190	2,785	825	0	4,275	25,544	0	1,858	0	***
San Pedro-Willcox-Yaqui	195	665	6,610	0	0	6,395	1,319	29,471	0	0	112,000,000
Santa Cruz-Magdalena-Sonoyta	85	500	7,245	0	20	35	1,366	0	926	0	176,900,00**
Upper Gila	445	970	6,305	105	50	3,795	2,289	0	9,523	11,119	86,300,000**
Verde	450	2,115	5,990	15	5	230	4,603	3,636	6	0	29,550,000
STATE TOTAL	3,530	9,365	77,480	1,450	260	35,420	168,586	121,046	18,481	11,237	***
	Total on Non-Indian 90,375			Total on Indian 37,130			Total on Non-Indian 289,632		Total on Indian 29,718		
	Total miles in Arizona 127,505						Total acres in Arizona 319,350				

Stream miles and lake acres are based on USGS digitized hydrology at 1:100,000, and have been rounded to the nearest five miles. Reservoir acres along the Colorado River include only the acres within Arizona. Waters include manmade reservoirs and ponds of any size. Ground water estimates of supply come primarily from Arizona Department of Water Resources, with some estimates from US Geological Survey.

Non-perennial lake acres include ephemeral lakes, playas, and storm water retention areas that have been specifically named as a surface water in Arizona's surface water quality standards.

* Estimates to 1200 feet below ground surface (acre-feet).

** Indicates that no estimate is available for one or more ground water basins in the watershed.

*** Indicates insufficient data to make an estimate.

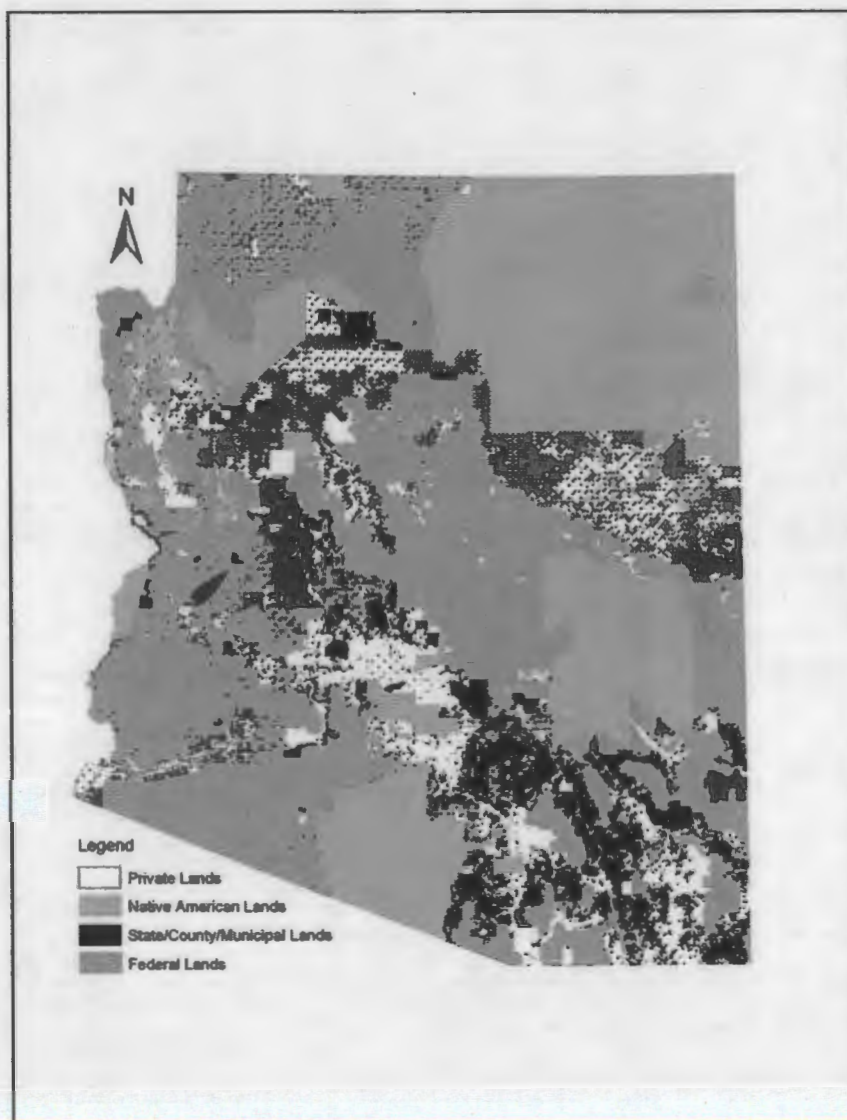


Figure 3. Land ownership in Arizona

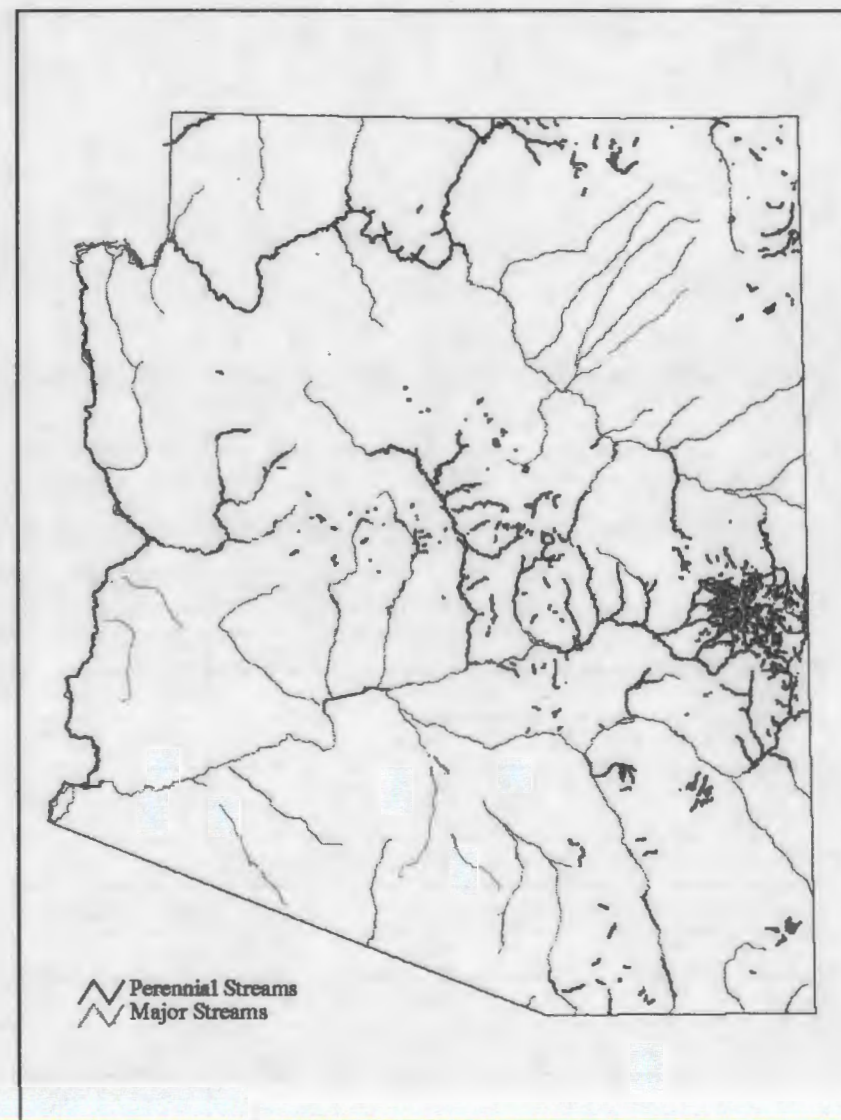


Figure 4. Perennial streams in Arizona



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III. How are Water Quality Assessments Performed?

The assessment process

A surface water is assessed based on all readily available, credible, and scientifically defensible monitoring data and information pertaining to possible numeric and narrative standards violations. Each designated use is assessed, and these assessments are combined to provide an overall water quality assessment and to determine whether the Department needs to take further actions.

In assessing surface water quality there is always a risk of concluding that a surface water is impaired when it is not, or concluding that a surface water is attaining its uses when it is actually impaired. Either of these errors involves a cost. Concluding that a surface water is impaired when it is not results in a use of resources that should be utilized elsewhere. Concluding that a surface water is not impaired when it actually is allows environmental degradation and human health threats to persist. The Impaired Water Identification Rule (A.A.C. R18-11-601 through 606) was developed to reduce both of these errors by providing a comprehensive and statistically sound method for listing a surface water.

The rest of this section describes the details of the assessment process.

Data Conflicts and Weight-of-evidence Assessments – The assessment process considers multiple environmental indicators. Each type of data (e.g., biological, toxicological, physical, and chemical) provides its own insights into the integrity and health of an aquatic system and the ability of the public to safely recreate in or use such waters. Each type of data also has different strengths and limitations. For example, chemical water samples generally evaluate and predict impacts from single pollutants, but do not capture the combined interactions of pollutants or cumulative impacts over time. Some chemicals may be found in high levels in fish tissue or sediments while available laboratory methods cannot detect their presence in the water column.

To make an assessment, apparent data conflicts must be resolved. Arizona uses a “weight-of-evidence” approach in completing assessments. The strengths and limitations of each data set are considered, looking at all of the data and exceedances in context with relevant information such as soil type, geology, hydrology, flow regime, geomorphology, natural processes, potential anthropogenic influences, characteristics of the stressors, age of the data, monitoring techniques, sampling plan, and climate.

Although multiple lines of evidence are desirable, only one line of water quality evidence may be sufficient to demonstrate that the surface water or segment is impaired or not attaining its uses.

Data or information collected during critical conditions may be considered separately from the complete dataset. A surface water may be impaired only during critical conditions such as high or low stream flow, weather conditions, or anthropogenic activities in the watershed, even though it is attaining standards during all other conditions.

Data Collection and Review – For this assessment, ADEQ reviewed all readily available surface water quality data collected during the five-year period beginning January 1998 through December 2002. More recent data than 2002 were used only if they would make a change in the 303(d) list – either placing a water on the list, or removing a water from the list. Data were requested from all federal and state agencies who routinely collect water quality data, including water chemistry, sediment contamination, bioassessments, fish tissue, fish kills, weed harvesting, and physical habitat information. EPA’s STORET database was queried. (STORET is EPA’s storage and retrieval system for housing surface water data from federal and state agencies.) The assessment team also made an effort to track down all surface water quality data collected through permit compliance, remediation, and enforcement programs within this agency, from universities, and from volunteer monitoring programs.

Data Quality Assurance – Data used in assessment and listing must be evaluated to determine whether they meet the credible data requirements outlined in the Impaired Water Identification Rule (A.A.C. R18-11-602). To assure that the data are credible and relevant, all water quality data are collected using a suitable Quality

Assurance Plan (QAP) and site-specific Sampling and Analysis Plan (SAP) or equivalent planning documents. Chemical and toxicological samples must be analyzed in a state-licensed laboratory, federal laboratory, or other laboratory that can

QAPs and SAPs

A **Quality Assurance Plan** details how environmental data collection and analyses are planned, implemented, and assessed for quality during the monitoring project.

A **Sampling and Analysis Plan** describes where, why, and how samples are to be collected to ensure that data quality objectives are met and that samples are spatially and temporally representative of surface water conditions.

demonstrate procedures that are substantially equal to those required by the Arizona Department of Health Services and use methods identified in A.A.C R9-14-610 or 40 CFR Part 136.

These requirements apply to all data used in this assessment. Quality Assurance Plans (QAP) and Sampling and Analysis Plans (SAP) must specify the use of accepted field and laboratory methods by adequately trained staff. ADEQ has QAPs and associated SAPs for each of its monitoring programs that are available for reference by other monitoring entities and the public.

Adequate training of field and laboratory personnel is essential. ADEQ, in conjunction with Arizona Department of Health Services and Gateway Community College, provides classes in field monitoring techniques. Several other community colleges and universities also offer classes in environmental sampling techniques.

The data are reviewed for accuracy and to determine whether all data points are valid. Questionable data are flagged and eliminated from the assessment process unless they can be validated.

Some data were included in the monitoring tables that did not meet the credible data requirements. As noted in the tables, these data were not used for the final assessments, but have been included as reference information.

Data Tracking – Surface and ground water data are stored in ADEQ's Water Quality Database and uploaded to the federal STORET database. Data uploaded to the STORET database can be queried on the internet at: <http://www.epa.gov/STORET>. ADEQ's Oracle based system is the repository of all water chemistry data collected by ADEQ and by other monitoring entities under contract by ADEQ. Eventually, all water quality data used in assessments will be stored in this database.

The groundwater portion of the database provides a comprehensive repository for well location information, well construction details, field measurement data (e.g., aquifer water levels), field observations (e.g., borehole geology), and water quality sampling results. The surface water portion stores sampling site information, field observations and measurements, and water quality sampling results. Further information concerning the Oracle database can be obtained by calling Wayne Hood, Data Management and Analysis Section Manager at (602) 771-4427.

Do all waters have to meet the same standards?

Standards and Designated Uses – Arizona sets narrative and numeric surface water standards for water quality based on the uses people and wildlife make of the water. These "designated uses" are specified in the standards for individual surface waters, or if the surface water is not listed in the rule, the designated uses are determined by the tributary rule. Surface waters have multiple designated uses, while aquifers are protected for drinking water use, unless specifically reclassified. Water quality is judged acceptable or impaired based on standards established to protect each designated use.

Designated Use Classification – Six groups of designated uses can be applied to surface waters. All bodies of water regulated by these standards (except canals) are protected for aquatic and wildlife uses and recreation in or on the water (either Full Body and Fish Consumption or Partial Body Contact).

● **Aquatic and Wildlife** criteria are divided into four categories. All surface waters, except canals, have one of these: Warmwater aquatic community (A&Ww), Coldwater aquatic community (A&Wc), Effluent dependent water (A&Wedw), or Ephemeral flow (A&We).



Aquatic and Wildlife criteria (except for A&W ephemeral) are also divided into acute criteria (established based on short-term effects) and chronic criteria (established based on long-term effects.)

● **Full Body Contact (FBC) or Partial Body Contact (PBC)** criteria were

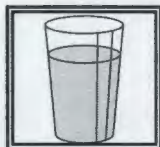
established to maintain and protect water quality for activities such as swimming, water skiing, boating, and wading. The FBC criteria are to protect public health when people engage in full immersion in the water and potential ingestion. The PBC criteria are to protect people who engage in water-based recreation where full immersion and ingestion of the water are unlikely (wading, fishing, boating).



● **Fish Consumption (FC)** water quality criteria were established to protect human health from pollutants which may bioaccumulate in aquatic organisms (e.g., fish, turtles, crayfish) and be consumed by people.



● **Domestic Water Source (DWS)** criteria are applied to surface water that is used as a raw water source for drinking water supply. The criteria were developed assuming that conventional water treatment (disinfection and filtration) would be needed to yield water suitable for human consumption.



● **Agriculture Irrigation (AgI)** criteria were established to protect water used for irrigating crops.



● **Agriculture Livestock Watering (AgL)** criteria were established to safeguard water used for consumption by livestock.

Narrative Standards – Narrative surface water standards (A.A.C. R18-11-108) were established to protect water quality when a numeric standard is not available or is insufficient (**Appendix C**). The new state TMDL statute requires development of narrative implementation procedures before narrative standards can be applied to 303(d) listing decisions. Several of these documents are under development but were not available for this assessment.

What changes have been made since the last assessment in 2002?

Surface water standards are reviewed and revised on a three-year cycle. These standards are established in Arizona Administrative Code (A.A.C.) R18-11-101 through R18-11-123 plus appendices. Ground water standards (A.A.C. R18-11-401 through R18-11-506) are revised as new drinking water protection standards are adopted.

Most of the changes in assessments were a result of the adoption of new surface water standards in 2002. These standards did not go into effect until after completion of the 2002 assessment, so this assessment is the first to use these new standards. The other significant change was the application of chronic standards for the Aquatic and Wildlife designated use. These changes are described below. The surface and ground water quality standards used in this assessment are included in **Appendix C**.

Turbidity and the New SSC Standard – Arizona repealed its turbidity standard in 2002 and adopted a suspended sediment concentration (SSC) standard to protect Aquatic and Wildlife designated uses. Turbidity is a qualitative measure

of water clarity or opacity, while SSC is a quantitative measure of suspended solids. These two parameters represent two different ways to measure fine suspended particles such as clay, silt, organic and inorganic matter, plankton, and other microscopic organisms.

Arizona's new numeric suspended sediment concentration criterion is intended to protect fish in streams, with the exception of effluent-dominated streams. It is also not applicable to lakes. Arizona's SSC standard is set at 80 mg/L, expressed as the geometric mean of at least four samples. The new standard is only applicable to samples collected at or near base flow and does not apply to a surface water during or soon after a precipitation event.

To apply this standard for assessment purposes, it is necessary to calculate base flow for each site, which requires a large amount of flow data. Therefore, an assessment of SSC was usually possible only at or near USGS gaging stations, where an abundance of current and historical flow data is available.

At the gage sites, USGS flow data from the last 10 to 30 years, as available, were used to determine what range of flow values represented the stream "at or near base flow." Only SSC data collected within this range were used for the assessment. All SSC data collected at flows higher than this range were not considered. After the SSC data collected at or near base flow were assembled, an annual geometric mean was taken. Any stream with more than one exceedance of the geometric mean was assessed as "impaired" in accordance with the Impaired Water Identification Rule (**Appendix B**). One exceedance was assessed as "inconclusive," and zero exceedances was "attaining."

Since the SSC standard was just recently adopted in 2002, a minimal amount of data were available for this assessment. Therefore, ADEQ has continued to assess the turbidity standard repealed in 2002 in an effort to record potential suspended sediment problems. Additionally, these exceedances provide evidence of a potential narrative bottom deposit standard violation. The standard was assessed according to the methods described later in this chapter, and waters were either assessed as "attaining" or "inconclusive" due to turbidity. No 303(d) listings were made based on this parameter, since the standard was repealed. Any waters that would have been impaired or inconclusive under the former standard were called "inconclusive" and placed on the Planning List for further study.

EPA placed three streams with exceedances of the turbidity standard on the 303(d) List, citing the exceedances as evidence of a narrative standard violation. ADEQ cannot make 303(d) listings based on narrative standards violations until narrative standard implementation procedures are adopted (procedures are

currently being developed). A table showing all waters with significant turbidity and/or SSC exceedances appears in Chapter VI.

Escherichia Coli and Fecal Coliform Standards – *Escherichia coli* is now Arizona's indicator of bacteria contamination for all surface waters, totally replacing fecal coliform standards after the 2002 triennial review. Whereas the former fecal coliform standards applied to all designated uses, the current *Escherichia coli* standards apply only to Full and Partial Body Contact uses. The Full Body Contact single sample maximum standard is now 235 colony forming units per 100 milliliters (CFU/100 ml), lower than the previous 580 CFU/100 ml, which resulted in several more waters being identified as "impaired." The Partial Body single sample maximum is set at 576 CFU/100 ml.

The new standards also replaced the application of a 30-day geometric mean (5-sample minimum), with a new four sample minimum geometric mean. The numeric value changed from 130 to 126. The new standard can be applied to any consecutive four samples and is not limited to those collected within 30 days.

The Impaired Water Identification Rule, however, which has not yet been revised since Surface Water Quality Standards changed, requires that listing decisions must be based on a 30-day geometric mean. Therefore, for this assessment the geometric mean standard of 126 could only be applied only when there were sufficient samples to determine a geometric mean within a 30-day period.

Designated Use Revisions – Designated uses were reviewed and several were revised during the last triennial review of Arizona's water quality standards. The predominant change was the result of research completed by ADEQ's Biocriteria Program that showed that aquatic communities change from warmwater to coldwater consistently around the 5,000-foot elevation in Arizona. Based on this research, many streams specifically listed in Arizona's Surface Water Quality Standards for Surface Waters were split: coldwater above the 5,000-foot line (A&Wc) and warmwater (A&Ww) below. (The reach numbers remained the same, except that an "A" was attached to the upper coldwater portion and "B" to the downstream warmwater portion.)

Modifications made to the Tributary Rule (A.A.C. R18-11-105) changed the designated uses assigned to all surface waters not named in Appendix B of the standards. These streams or lakes are no longer assigned Agricultural Irrigation, Agricultural Livestock Watering, or Domestic Water Source uses. The waters are assigned Aquatic and Wildlife, Fish Consumption, and Body Contact uses as follows:

- Ephemeral waters are assigned the Aquatic and Wildlife ephemeral and Partial

Body Contact uses only.

- Perennial and intermittent waters are assigned the Aquatic and Wildlife coldwater use if above 5,000 feet, and warmwater if below 5,000 feet.
- The Fish Consumption and Full Body Contact uses are assigned to all perennial and intermittent waters.

Changes in Other Standards – A number of other standards were significantly changed by the adoption of the new standards in 2002. Among those, the following changes resulted in several additions or delistings to the 303(d) List or the Planning List:

- The beryllium standards for Fish Consumption changed from 0.21 µg/L to 1,130 µg/L;
- The fluoride standards to protect Full and Partial Body Contact changed from 8,400 µg/L to 84,000 µg/L;
- A new lead standard to protect Full and Partial Body Contact was established at 15 µg/L (no standard previously for these uses);
- The manganese standards to protect Full and Partial Body Contact changed from 19,600 µg/L to 196,000 µg/L.

Application of Chronic Standards – The 2004 assessment is the first to apply chronic standards for the Aquatic and Wildlife designated use using the requirements of the Impaired Water Identification Rule (**Appendix B**, R18-11-605.D.2.b). In accordance with the rule, a surface water is assessed as "impaired" if more than one exceedance of an Aquatic and Wildlife chronic water quality standard occurs. Although a geometric mean of the last four samples must be taken to apply the standard for enforcement purposes, the Impaired Water Identification Rule requires only two exceedances to be placed on the 303(d) List, with no application of a geometric mean.

Acute and Chronic Standards

Some water quality parameters have both an "acute" and a "chronic" standard (**Appendix C**). Acute standards are set at higher concentrations than chronic standards, to protect aquatic life and wildlife from severe short-term effects from the parameter of concern. Chronic standards are set at lower concentrations than acute standards, to protect aquatic life and wildlife from long-term effects of lower-level exposure.

Do some waters have special standards to meet?

Unique Waters Classification and Antidegradation Standards – A Unique Water is a surface water classified by ADEQ as an outstanding state resource water (as prescribed in A.A.C. R18-11-112). Twenty streams have been established as Unique Waters in Arizona (Figure 11).

ADEQ may classify a surface water as a unique water through the rule making process if it meets one of the following criteria:

- The surface water is of exceptional recreational or ecological significance because of its unique attributes, including but not limited to attributes related to the geology, flora, fauna, water quality, aesthetic values, or wilderness characteristics of the surface water.
- Threatened or endangered species are known to be associated with the surface water and existing water quality is essential to the maintenance and propagation of a threatened or endangered species, or the surface water provides critical habitat for a threatened or endangered species.

Public comments in support or opposition to a Unique Waters nomination are considered by the Department in making the decision on classifying a water as meeting one or both of these criteria.

Unique waters are given more stringent surface water quality protections than other surface waters under the state's antidegradation rule A.A.C. R18-11-107(D). Under antidegradation implementation procedures, activities that may result in a new or expanded discharge of pollutants to Unique Water (or its tributaries) are prohibited if the discharge would cause degradation of existing water quality. Discharges include those caused by land use activity (e.g., construction, mining, grazing, agriculture) as well as discharges requiring a surface water discharge permit (e.g., wastewater treatment plant discharge, adit, dredge and fill activity).

Additional, more stringent, numeric standards can be specified for Unique Waters. These site specific standards are listed in the surface water standards (A.A.C. R18-11-112).

Effluent Dependent Water – ADEQ classifies some waters as effluent dependent waters (Figure 12). These surface waters would be ephemeral, except for the discharge of treated effluent. Designated uses are limited to Aquatic and

Wildlife effluent dependent water, Partial Body Contact, and in some places Agriculture Livestock Watering.

Arizona has developed specific Aquatic and Wildlife effluent dependent water (A&Wedw) standards for bacteria, water temperature, dissolved oxygen, and acute and chronic toxic chemical criteria (Appendix C). In general, these standards are less stringent than other Aquatic and Wildlife designated uses due to the limited species of aquatic life that these waters can support. The exception is *Escherichia coli*, which is more stringent because of the likelihood of pathogens in wastewater.

Moderating Provisions – Dischargers have the opportunity to establish a "mixing zone" or "variance" through the NPDES/AZPDES permit process. These moderating provisions provide an alternate standard for the surface water. A mixing zone is a prescribed area or volume of surface water where initial dilution of the discharge takes place. A mixing zone can only be established if there is adequate water for dilution; therefore it cannot be applied to an ephemeral drainage.

ADEQ can also grant a pollutant specific variance for a point source discharge for up to five years where:

- 1) The permittee demonstrates that the treatment is more advanced than the technology-based effluent limitations needed to comply with the water quality standards, but it is not technically feasible to achieve this level of treatment within the next five years, or the cost of such treatment would result in unacceptable social and economic impacts.
- 2) Human-caused conditions or sources of pollution prevent attainment of the water quality standard and cannot be remedied within the next five years.

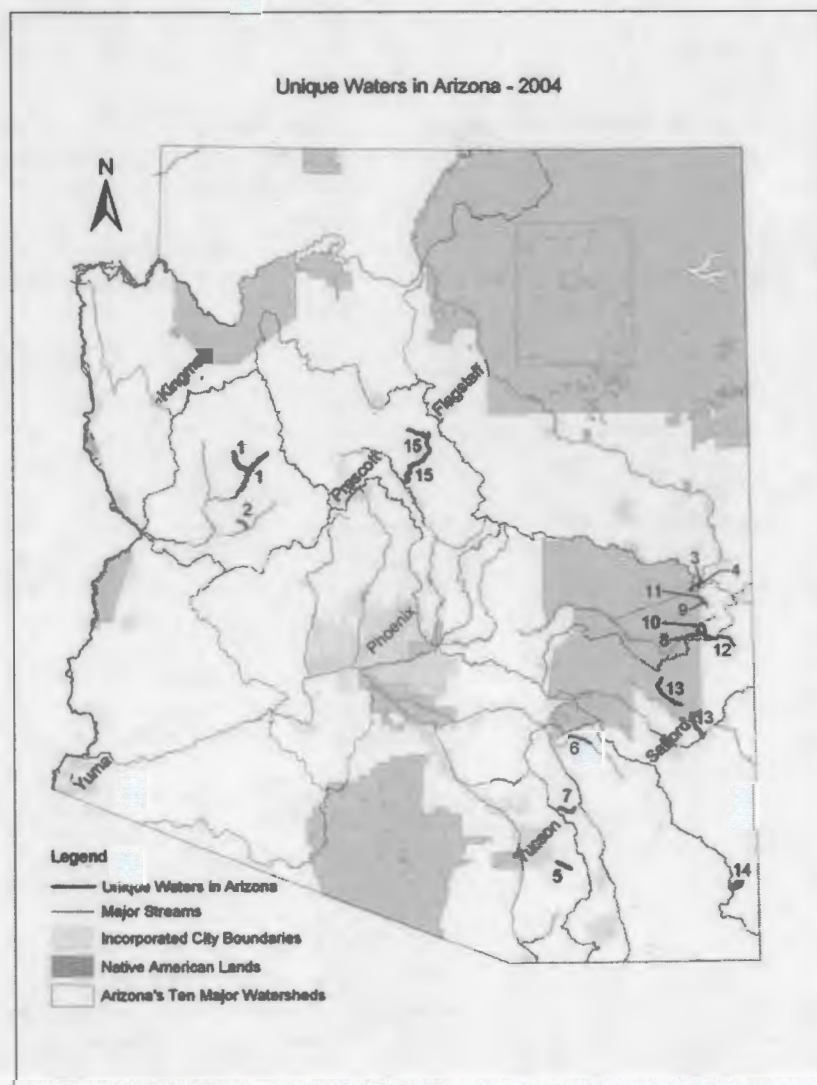


Figure 11. Unique waters in Arizona

Map #	Stream Names and Reaches	ID Numbers
1	Burro Creek — above confluence with Boulder Creek	AZ15030202-011 AZ15030202-009 AZ15030202-008
1	Francis Creek — in Mohave and Yavapai Counties	AZ15030202-012
2	Peoples Canyon Creek — tributary to the Santa Maria River	AZ15030203-524
3	Little Colorado River, West Fork of the Little Colorado — above Government Springs	AZ15020001-013A
4	Lee Valley Creek — headwaters to Lee Valley Reservoir	AZ15020001-232A
5	Cienega Creek — Gardner Canyon to USGS gage station (Pantano Wash)	AZ15050302-006B
6	Aravaipa Creek — Stowe Gulch to downstream boundary of Aravaipa Canyon Wilderness Area	AZ15050203-004B
7	Bushman Canyon Creek — headwaters to 9.8 miles downstream	AZ15050203-010A
8	Bear Wallow Creek — headwaters to San Carlos Indian Reservation	AZ15060101-023
8	Bear Wallow Creek, North and South Forks	AZ15060101-022 AZ15060101-258
9	Hay Creek — headwaters to West Fork of Black River	AZ15060101-353
10	Snake Creek — headwaters to Black River	AZ15060101-045
11	Stinky Creek — Fort Apache Indian Reservation to West Fork of the Black River	AZ15060101-352A
12	KP Creek — headwaters to Blue River	AZ15040004-029
13	Bonita Creek — tributary to the upper Gila River	AZ15040005-032 AZ15040005-030
14	Cave Creek and South Fork of Cave Creek — headwaters to Coronado National Forest boundary	AZ15040006-852A AZ15040006-849
15	Oak Creek, including West Fork of Oak Creek	AZ15060202-019 AZ15060202-018 AZ15060202-017 AZ15060202-016 AZ15060202-020

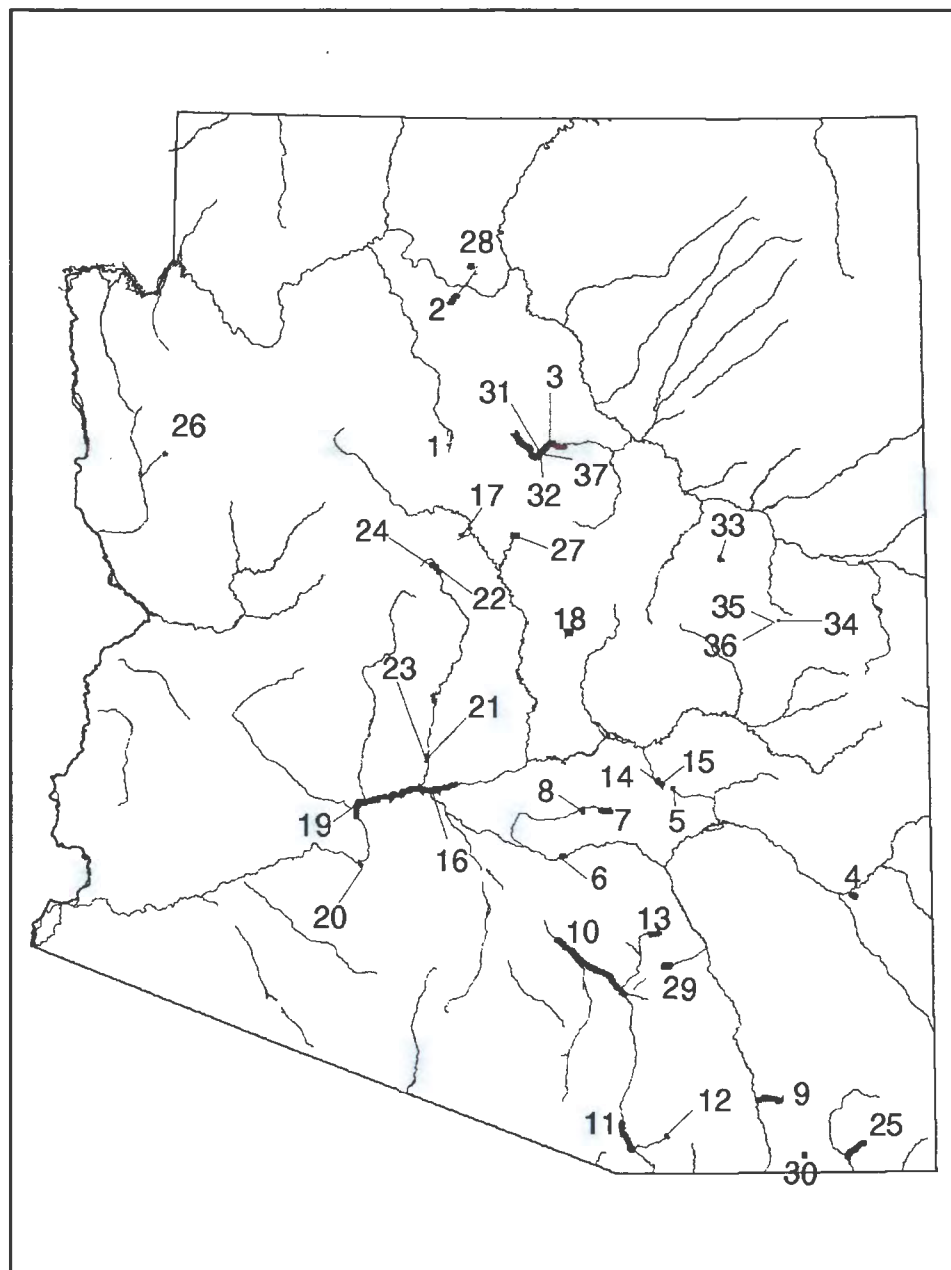


Figure 12. Effluent dependent waters in Arizona (see table on next page for corresponding waterbody names)

Effluent dependent waters in Arizona (for Figure 12)

Map #	Surface Water Name and Wastewater Treatment Plant (WWTP)	Map #	Surface Water Name and Wastewater Treatment Plant (WWTP)	Map #	Surface Water Name and Wastewater Treatment Plant (WWTP)
1	Cataract Creek below Williams WWTP to 1 km downstream	16	Salt River below Phoenix 23 rd Avenue WWTP (Phoenix metro WWTPs) to Gila River	31	Lake Humphreys from Flagstaff WWTP
2	Bright Angel Wash below So Rim of Grand Canyon WWTP to Coconino Wash	17	Bitter Creek below Jerome WWTP to Indian Reservation	32	Whale Lake from Flagstaff WWTP
3	Rio de Flag below Flagstaff WWTP to San Francisco Wash	18	American Gulch below the No. Gila County WWTP to E. Verde River	33	Dry Lake from Stone Container WWTP
4	Bennett Wash below ADOC*-Safford WWTP to Gila River	19	Gila River below #16 to Gillespie Dam (Phoenix metro WWTPs)	34	Pintail Lake from Show Low WWTP
5	Unnamed wash below ADOC*-Globe WWTP to Indian Reservation	20	Unnamed wash from Gila Bend WWTP to Gila River	35	Telephone Lake from Show Low WWTP
6	Gila River below Florence WWTP to Felix Rd.	21	Agua Fria River below El Mirage WWTP to 2 km downstream	36	Ned Lake from Show Low WWTP
7	Queen Creek below Superior WWTP to Potts Canyon	22	Agua Fria River below Prescott Valley WWTP (#24)	37	Lower Walnut Canyon Lake from Flagstaff WWTP
8	Unnamed wash below Queen Valley WWTP to Queen Creek	23	Unnamed wash below Luke Air Force Base WWTP to Agua Fria River	38	Lake Cochise south of Twin Lakes Golf Course
9	Walnut Gulch below Tombstone WWTP to Tombstone Wash	24	Unnamed wash below Prescott Valley WWTP to Agua Fria River		
10	Santa Cruz River below Pima County Roger Rd. WWTP to Baumgartner Rd.	25	Unnamed wash to Whitewater Draw below Bisbee Airport WWTP)		
11	Santa Cruz River below Nogales International WWTP to Tubac bridge	26	Holy Moses Wash below Kingman WWTP to 3 km downstream		
12	Sonoita Creek below Patagonia WWTP to 750 ft. downstream	27	Jack's Canyon Wash below Big Park WWTP to Dry Beaver Creek		
13	Unnamed wash below Oracle WWTP to 5 km downstream	28	Transept Canyon below No. Rim Grand Canyon WWTP to 1 km downstream		
14	Pinal Creek below Globe WWTP (#15) to Radium	29	Unnamed tributary to Alder Wash below Mount Lemmon WWTP		
15	Unnamed wash below Globe WWTP to Pinal Creek	30	Mule Gulch below Bisbee WWTP to Highway 80 bridge		

* ADOC = Arizona Department of Corrections

Arizona's assessment criteria

Most of Arizona's assessments are based on numeric water chemistry data. To determine whether there are sufficient data and that the data are representative of the surface water being assessed, the following attributes must be considered: core parametric coverage, number of samples, number of sampling events, seasonal distribution of samples, and sample locations. The criteria for assessment are described in the following paragraphs.

Core Parametric Coverage – Although all parameters with numeric standards are used for this assessment, a core set of parameters was established for each designated use (**text box**). These core parameters must be sampled during at least three independent sampling events to determine whether a specific designated use assigned to the surface water is “attaining.”

Core parameters were selected based in part on EPA guidance in the *Consolidated Assessment and Listing Methodology* (CALM) document (EPA 2002). This guidance places emphasis on narrative standards, suggesting that core indicators would include: bioassessments, habitat assessments, ambient toxicity testing, contaminated sediment, health of individual organisms, nuisance plant growth, algae, sediments, and odor and taste. At this time, however,

Core Parametric Coverage

For each designated use, at least three samples of the following parameters are required to assess the designated use as “attaining” uses:

Aquatic and Wildlife: dissolved oxygen, flow (if a stream) and depth (if a lake), hardness, pH, turbidity/suspended sediment concentration, total nitrogen and total phosphorus¹, dissolved metals (cadmium, copper, and zinc)

Fish Consumption: total mercury

Full Body or Partial Body Contact: *Escherichia coli*, pH

Domestic Water Source: nitrate/nitrite or nitrate, pH, total fluoride, and total metals (arsenic, chromium or chromium VI, and lead)

Agriculture Irrigation: pH, total boron, and total manganese

Agriculture Livestock Watering: pH, total copper, and total lead

Special notes:

1. Nitrogen and phosphorus are required only in surface waters with nutrient standards.
2. Dissolved oxygen, turbidity/SSC, and *Escherichia coli* are not required in ephemeral waters.
3. Suspended sediment concentration is not required in effluent dependent waters.

Arizona's core parameters are restricted to numeric standards, at least until narrative standards are adopted into rule.

Arizona's choice of core indicators has changed slightly due to standards changes and more recent water quality research. Dissolved chromium was dropped from Aquatic and Wildlife, and total chromium was added to Domestic Water Source. Lead was also added to Domestic Water Source. Metals were dropped from Full and Partial Body Contact. Core parameters will continue to change in the future as better assessment tools and criteria are developed.

Exempted Exceedance of Standards – Some exceedances are specifically exempted in Arizona's surface water standards or Impaired Water Identification Rule (**Appendix B and C**). In these cases, the exceedances would be noted in the monitoring tables, but not used as evidence of impairment:

● Naturally-occurring conditions (A.A.C. R18-11-119). For this assessment, the naturally-occurring conditions exempted included:

- Low dissolved oxygen occurring due to documented ground water upwelling
- Areas minimally impacted by human activity, where springs are the source of a pollutant due to natural deposits
- Minimally impacted drainage areas, such as a small drainage in the Grand Canyon National Park, where excess turbidity is due to natural erosion of sandstone geological formations
- Operation and maintenance of a canal, drain, or municipal park lake (e.g., dewatering, dredging, and weed control) (A.A.C. R18-11-117);
- Routine physical or mechanical maintenance of dams and flood control structures may cause increases in turbidity (A.A.C. R18-11-118); and
- Discharge of lubricating oil associated with start-up of well pumps which discharge to canals (A.A.C. R18-11-117).

Note that some waters are not defined as a “surface water” in Arizona's surface water quality standards (e.g., wastewater treatment lagoons or impoundments).

Spatial and Temporal Considerations – To determine whether there are sufficient samples and sampling events to support an assessment, first it must be determined that the samples are spatially and temporally independent, as required by the Impaired Water Identification Rule (A.A.C. R18-11-603). Samples are spatially independent if they are collected more than 200 meters apart; or if collected less than 200 meters apart, samples were taken to characterize the effect of an intervening tributary, outfall, pollution source, or significant hydrographic or hydrologic change. Samples are temporally independent if they

are collected more than seven (7) days apart.

If samples are neither spatially nor temporally independent (e.g., samples taken at different depths in a lake), the data will be represented by a calculated value. The method for calculating these values varies by type of surface water standard. If the standard was established to protect from immediate or acute impacts, then a maximum or worst case value for the data set is used. Examples of standards developed for acute effects include: dissolved metals, chlorine, dissolved oxygen, and ammonia (some of these have chronic standards as well). However, if the standard was developed based on concern for long-term effects, then an appropriate measure of central tendency (e.g., mean, median, geometric mean) is used. Most standards that protect domestic water source, fish consumption, and agricultural uses fall into this second category.

Some surface water quality standards are evaluated by number of sampling events, rather than number of samples. Parameters that must be assessed in this manner are the acute and chronic standards for the Aquatic and Wildlife designated uses, the *Escherichia coli* standard for the Full and Partial Body Contact designated uses, and the nitrate standard for the Domestic Water Source use. An assessment is made based on sampling event, where more than one sampling event exceeding standards is assessed as "impaired." In other words, if an exceedance occurred at multiple sample sites on a reach within a 7-day period, these data are evaluated as one sampling event exceeding standards. In the monitoring tables, event exceedances are indicated in the summary row for each reach or lake.

Adjustments due to Testing Precision – Field measurements and certain analytical methods are sometimes less precise than other water quality measurements. Imprecision due to error is addressed through quality assurance/quality control procedures (e.g., calibration of the field equipment, placement of the instrument in the stream, holding temperatures); however, other variations are inherent in natural systems, equipment specifications, and analytical methods.

When a field sample measurement is within the manufacturer's specification for accuracy, the result is considered to meet the surface water quality standard. For the 2004 listing cycle, three field measurements were adjusted due to the following manufacturer specifications concerning precision:

- pH is ± 0.2 standard units,
- Dissolved oxygen is ± 0.2 mg/L, and
- Turbidity is ± 2 NTU.

For example, dissolved oxygen reported at 5.9 mg/L was not counted as a violation of the 6.0 mg/L standard (range 5.8 - 6.2).

For the 2004 listing cycle, the imprecise nature of bacteria samples were also considered when a 303(d) Listing decision would be based on results reported relatively near the single sample maximum standard of 235 CFU. Both lab and field bacterial analyses provide an estimation of bacterial density, reported in terms of Most Probable Number (MPN). For example, using the multiple tube technique, if the result is reported as 240 colony forming units (CFU), there is a 95% confidence level that the result is between 100 and 940 CFU (Clesceri et. al. 1998).

Generally, a 303(d) Listing can result from only two (2) exceedances of the single sample maximum *Escherichia coli* standard within a three-year period. However, when one of the two samples was near the standard (for example, only 240 CFU), the exceedances were considered "inconclusive" and did not result in a listing.

Assessment of each Designated Use (Step 1) – The following criteria are applied to assess the individual designated uses assigned to the surface water in rule:

● **Attaining** – A designated use is assessed as "attaining" if:

- A. For most standards (except situations in B, C, and D below),
 - 1. Three or more temporally independent sampling events for all core parameters (see core parameters discussion above), collected across multiple seasons, and
 - 2. No exceedances, or
 - 3. If exceedances, 10 or more samples and fewer exceedances than would place the water on the Planning List (based on Table 1 in the Impaired Water Identification Rule).
- B. For acute Aquatic and Wildlife standards, the nitrate and nitrite/nitrate standard, and single sample maximum bacteria standards,
 - 1. Three or more temporally independent sampling events for all core parameters, collected across multiple seasons, and
 - 2. No exceedances, or
 - 3. If exceedances, three years of samples since last exceedance.
- C. For chronic Aquatic and Wildlife standards,
 - 1. Three or more temporally independent sampling events for all core parameters, collected across multiple seasons, and
 - 2. No exceedances.

D. For an annual mean (nutrients), 90th percentile (nutrients), or geometric mean (Escherichia coli or SSC), no exceedances within the assessment period.

●**Impaired** – A designated use is assessed as “impaired” if:

- A. For most standards (except situations in B, C, and D below),
 - 1. 20 or more samples with the minimum number of exceedances listed in Table 2 (the 303d List) in the Impaired Water Identification Rule, and
 - 2. Collected during three or more temporally independent sampling events.
- B. For acute Aquatic and Wildlife acute standards, the nitrate and nitrite/nitrate standard, and single sample maximum bacteria standards),
 - 1. More than one exceedance during temporally independent sampling events within a 3-year period, and
 - 2. Fewer than three years of samples since last exceedance.
- C. For Aquatic and Wildlife chronic standards,
 - 1. More than one exceedance during temporally independent sampling events.
- D. For an annual mean (nutrients), 90th percentile (nutrients), or geometric mean (Escherichia coli or SSC), more than one exceedance within the assessment period.

●**Not attaining** -- A designated use is assessed as “not attaining” if it would be “impaired” except that:

- A. A TMDL has been approved by EPA and TMDL implementation is ongoing, but the surface water is not yet attaining its designated uses;
- B. Another action is occurring and documented that is expected to bring the surface water to “attaining” by the next assessment; or
- C. Investigation shows that impairment is due to pollution and not a pollutant. (For example, investigation reveals that lake low dissolved oxygen and pH problems are not due to nutrient loadings but are solely due to the lack of flow.)

●**Inconclusive** – A designated use is assessed as inconclusive if:

- A. Insufficient samples, exceedances, or core parameters to assess as “attaining,” “not attaining,” or “impaired” (see above),
- B. Samples collected did not meet credible data requirements,
- C. There is potential evidence of a narrative violation (i.e., fish kill, beach closure, fish anomalies, exceedances of the former turbidity standard, fish advisory, etc.).

Assessment of the Stream Reach or Lake (Step 2) – Once each designated use is assessed, the assessments are combined into an overall assessment of the stream reach or lake. A stream reach or lake can be placed into one of the following categories:

- Attaining All Uses** – All designated uses assessed as “attaining” (Category 1);
- Attaining Some Uses** – At least one designated use assessed as “attaining” and all other uses assessed as “inconclusive” (Category 2);
- Inconclusive** – All designated uses are “inconclusive” (Category 3) (by default, any surface water not assessed due to lack of credible data is actually included in this category);
- Not attaining** -- At least one designated use is “not attaining,” and no designated use is “impaired” (Category 4);
- Impaired** – At least one designated use was assessed as “impaired” (Category 5).

Surface waters in Category 5 are placed on the 303(d) List and scheduled for TMDL development. Surface waters with any designated uses assessed as “inconclusive” or “not attaining” are placed on the Planning List for further monitoring.

The flow chart (**Figure 14**) on page 13 helps to illustrate these two steps of the assessment process.

The use assessments are made in Chapter IV and combined for an overall assessment of designated uses. Then the surface waters are placed in one of the five category lists in Chapter V.

Which "Cottonwood Wash" and how much was assessed?

To communicate assessment information and eliminate the ambiguity caused by many streams in Arizona having the same common name (e.g., Sycamore Creek) and a large number of unnamed washes, all of the assessed lakes and streams have been given identification numbers. These numbers are based on the drainage area in which the surface water is located (Hydrologic Unit Code area -- see chapter II) and a reach or lake number. These identification numbers can be linked to a digitized hydrography through a computerized Geographic Information System (GIS). When assessments are complete, ADEQ provides the assessment information to EPA, along with GIS coverages, which indicate where the assessed lakes and streams are located. These linkages were also used in this report to generate the assessment maps provided in Chapter IV.

Arizona assesses an entire surface water "reach" or lake based on one or more monitoring sites (**Figure 13 and text box**). As more monitoring data become available, differences in water quality in portions of a reach or a lake may become apparent, and the reach or lake is segmented. This has frequently occurred during TMDL investigations, as the extent of contamination becomes more defined.



Figure 13. Reach description

Reaches are also routinely divided due to changes in designated uses. The revised water quality standards adopted in 2002 recognized that aquatic communities change from coldwater to warmwater at a 5000-foot elevation; therefore, many reaches were split into coldwater and warmwater portions.

Reach Definition and Delineation

The U.S. Geological Survey divided streams across the United States into drainage areas or Hydrologic Unit Code areas (HUCs). The Environmental Protection Agency then divided the streams into reaches based on hydrological features such as tributaries and dams, and provided a unique number for each stream reach. These reaches have been further divided by ADEQ due to changes in designated uses, hydrology, and documented changes in water quality. In Figure 13 above, 15060202 is the HUC and 028 is the reach.



An ADEQ staff member prepares to sample Tonto Creek, south of Payson, Arizona. Tonto Creek begins as a coldwater stream at its headwaters near Christopher Creek, Arizona. This site is located at a lower elevation in the warmwater portion of stream, just above its confluence with Gun Creek. Different reaches of the same stream often have varying designated uses and associated water quality standards, so they must be assessed separately.



The Verde River, one of the largest rivers in Arizona, is segmented into 23 reaches for assessment purposes. This site is located at Beasley Flat Recreation Site, near Camp Verde, Arizona.

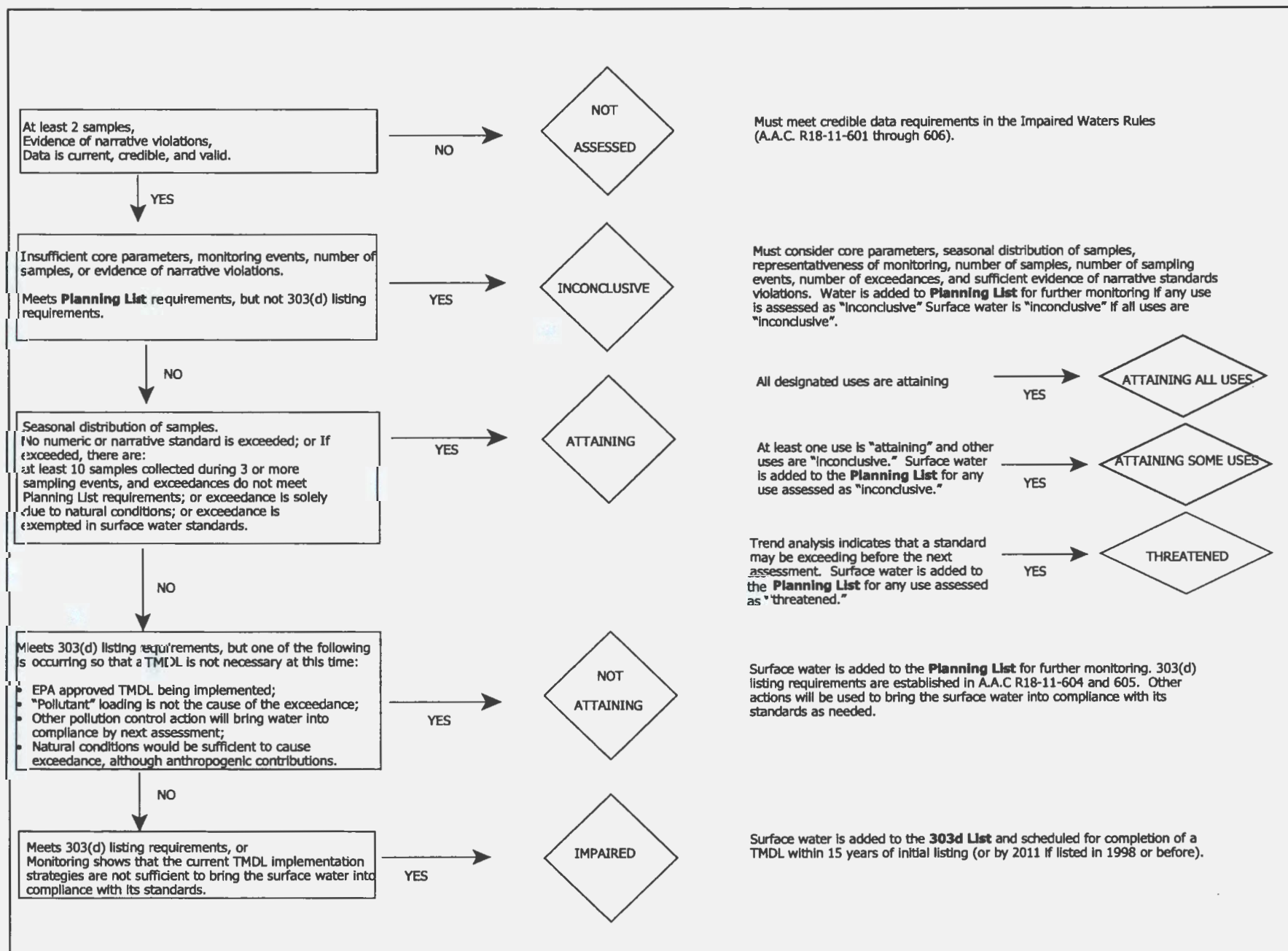


Figure 14. 2004 assessment process diagram

How do lake and stream assessments differ?

The depth of a lake adds an additional level of complexity to an assessment. Samples are frequently collected at multiple levels in a lake because lower levels of a lake may have naturally higher chemical concentrations, especially when the lake is "stratified." Stratification is a natural process in which several horizontal water layers of different density may form in a lake. During stratification, the bottom layer (hypolimnion) is cool, high in nutrients, low in light, low in productivity, and low in dissolved oxygen. The top layer (epilimnion) is warm, higher in dissolved oxygen, light, and production, but normally lower in nutrients. The sharp boundary between the two layers is called a thermocline (metalimnion). Lake stratification is caused by temperature-created differences in water density.

Some measurements are more commonly taken in lakes or are used in a different way in lakes than in streams. For example, Chlorophyll-*a*, Secchi depths, and volatile suspended solids results are compared to total suspended solids and turbidity values to determine whether excessive turbidity is actually related to a planktonic algal bloom and potential excessive nutrients or is related to suspended sediments and potential excessive lake sedimentation.

Trophic Status – In addition to comparing water quality monitoring results with standards, ADEQ classifies lakes according to trophic status. Lakes are classified in a continuum of lake stages from low productivity to high productivity as nutrients accumulate or are depleted in the system.

Oligotrophic	Low algal or plant productivity
Mesotrophic	Medium algal or plant productivity
Eutrophic	High algal or plant productivity
Hypereutrophic	Very high algal or plant productivity and light-limited (Algae shades available light, inhibiting further growth)

A trophic classification is included in the assessment tables in Chapter IV. The "Trophic Status Index" used in this assessment integrates phosphorus, nitrogen, Secchi depth, and Chlorophyll *a* data, as indicated in Table 6. This trophic classification is based on Patrick Brezonik's "Trophic State Indices: Rationale for Multivariate Approaches" (1986). The Lakes Program is working on refining this trophic analysis in the future by accounting for macrophytes, algal diversity, and biovolume.

Given sufficient time, lakes go through a natural trophic progression accumulating nutrients and biomass. However, activities within the watershed may unduly speed up this process. It is important to note the hydrologic design and construction (e.g., shallow, with little water flow through) of most Arizona lakes may create management challenges such as high productivity and sedimentation.

Table 4. Trophic classification thresholds

	TROPIC STATUS			
	Oligotrophic	Mesotrophic	Eutrophic	Hypereutrophic
Trophic Status Index	<30	30-45	45-65	>65
Chlorophyll-<i>a</i> (µg/L)	<5	5-12	12-20	>20
Secchi Depth (meters)	>3	1.2-3	0.6-1.2	<0.6
Total Phosphorus (µg/L)				
Phosphorus-limited	<10	10-20	20-35	>35
Nitrogen & Phosphorus-limited	<13	13-35	35-65	>65
Total Nitrogen (mg/L)				
Nitrogen-limited	<0.25	0.25-0.65	0.65-1.1	>1.1
Nitrogen & Phosphorus-limited	<0.28	0.28-0.75	0.75-1.2	>1.2

Nitrogen- limited = nitrogen : phosphorus ratio is <10.

Phosphorus-limited = nitrogen : phosphorus ratio is > 30.

Nitrogen and phosphorus-limited (colimited) = nitrogen : phosphorus ratio is 10-30

Can one get a copy of the data used for this assessment?

ADEQ continues to look for ways to share the data used in this assessment report with the public. Monitoring data are summarized in Chapter IV and are organized into tables by watershed. These summary tables indicate which agency and program collected the data, the amount and type of data, dates collected, frequency of exceedances, and more. Ambient surface water quality data collected by ADEQ staff can be obtained through EPA's STORET database on the internet at <http://www.epa.gov/STORET>.



Francis Creek, near the Upper Burro Creek Wilderness Area north of Bagdad, Arizona.

The Bill Williams Watershed

The Santa Maria River and the Big Sandy River drainages merge at Alamo Lake to create the Bill Williams River, which connects to the Colorado River at Parker Dam. Perennial flow in this watershed is frequently interrupted (short segments), even on the larger, mainstem rivers.

Land ownership is divided approximately as: 27% private land, 28% state land, and 45% federal land (no Tribal lands). With only 8,000 people (2000 census), this watershed does not have any large population centers. Open range grazing is the principal land use. A large mining complex is located in the Bagdad area, while historic mine sites are scattered throughout the watershed.

Elevations range from 8,417 feet (above sea level) at Hualapai Peak to 1,000 feet near the Colorado River. Most of the watershed is below 5,000 feet, with low desert fauna and flora and warmwater aquatic communities where perennial waters exist.

The assessment – Assessments were completed for 16 stream reaches and one lake in this watershed. Of the 256 stream miles assessed, 32 miles (one reach) were attaining all uses and 35 miles (three reaches) were impaired. Both lakes assessed (Alamo and Coors Lake) were found to be impaired. The area of these lakes is approximately 1,643 acres (including only the perennial area of Alamo Lake). All other surface waters were assessed as inconclusive or attaining some uses.

A watershed assessment map follows on the next page, illustrating stream and lake assessments by category. The Bill Williams **monitoring table (Table 5)** following the map summarizes the water quality data used in the assessment. It is followed by the **assessment table (Table 6)**, which bridges current assessments with past assessments and impaired water identification. Important to note in this table are comments regarding previous 303(d) lists (what has been added and removed), category designations (1 through 5), references to potential actions by EPA, and status of TMDLs.

More detailed information on how to use these tables can be found at the beginning of this chapter (p. IV-1). Information about assessment methods and criteria can be found in Chapter III.

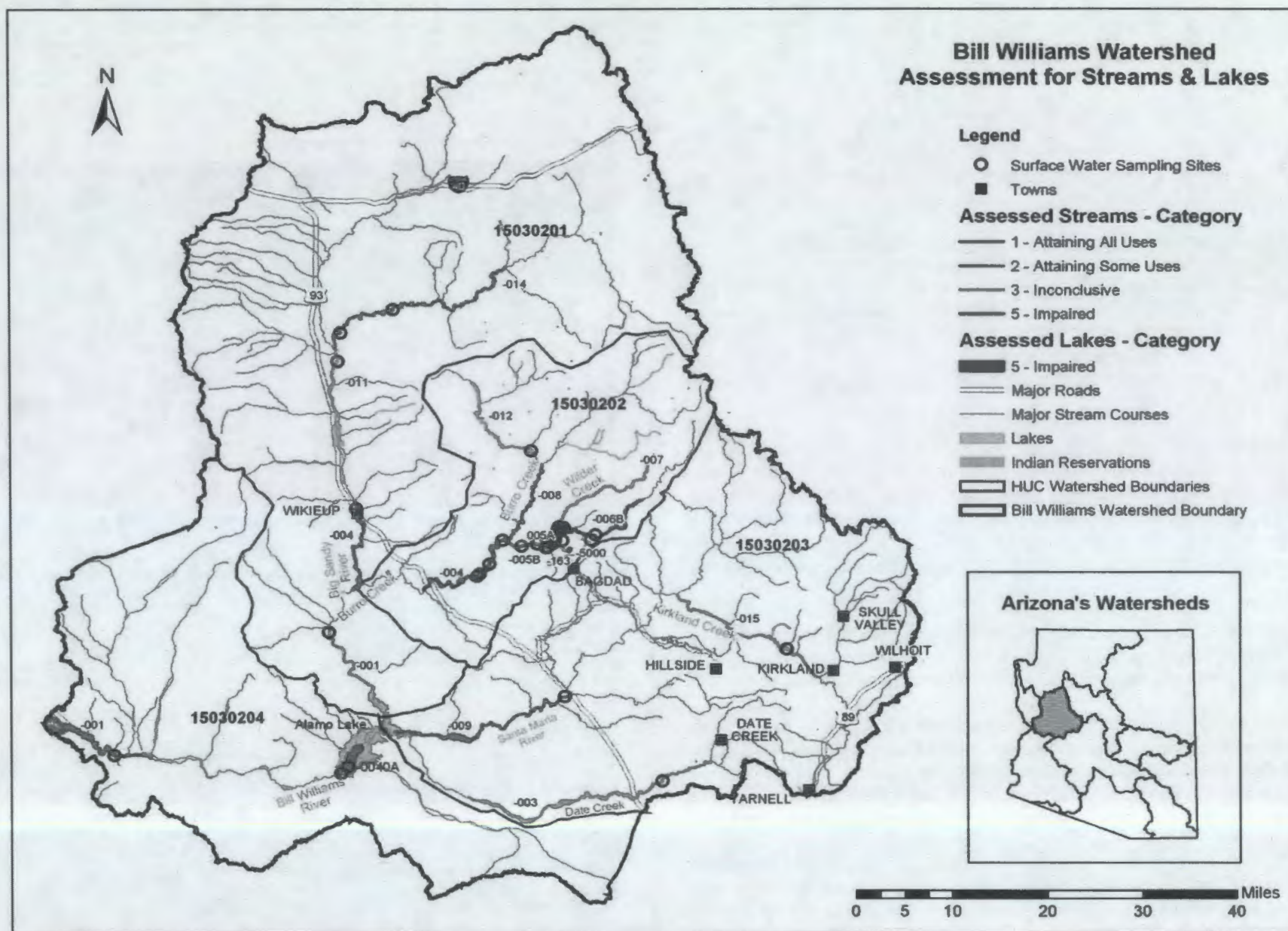


Figure 15. Watershed monitoring and assessments

TABLE 5. BILL WILLIAMS WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
STREAMS MONITORING DATA								
Big Sandy River Deluge Wash - Tule Wash AZ15030201-011 A&Ww, FBC, FC, AgL	ADEQ Ambient Monitoring Below Cane Springs BWBSR041.02 100458	1998 - 1 partial suite 1999 - 3 partial suites	Turbidity (former standard) NTU	50 (A&Ww)	7 - 68	1 of 4		
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	1998 -1999 4 sample events	Turbidity (former standard) NTU	50 (A&Ww)	7 - 68	1 of 4	Inconclusive (see comment)	ADEQ collected 4 samples in 1998-1999. Assessed as "inconclusive" and placed on the Planning List due to missing core parameters (see list below) and one exceedance of the former turbidity standard. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring. Missing core parameters: <i>Escherichia coli</i> , dissolved metals (cadmium, copper, and zinc), and total metals (copper, lead, and mercury).
Big Sandy River Sycamore - Burro Creek AZ15030201-004 A&Ww, FC, FBC, AgL	ADEQ Fixed Station Network Below Highway 93 bridge BWBSR024.50 100400	1998 - 1 partial suite 1999 - 3 full + 2 partial suites 2000 - 4 full suites 2001 - 4 full suites 2002 - 5 full suites	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	4.9 - 8.4 (63 - 93%)	3 of 19		Lab reporting limits for 16 other selenium samples were too high to use results for assessment.
			Mercury (total) µg/L	0.6 (FC)	<0.5 - 0.86	1 of 17		
			Selenium (total) µg/L	2 (A&Ww chronic)	<5 - 5.7	1 of 1		
			Turbidity (former standard) NTU	50 (A&Ww)	3 - 80	2 of 19		
	Summary Row A&Ww Inconclusive FC Attaining FBC Attaining AgL Attaining	1998-2002 19 sampling events	Dissolved oxygen mg/L	6.0 (90% saturation) (A&Ww)	4.9 - 8.4 (63 - 93%)	3 of 19	Attaining	ADEQ collected 19 samples in 1998-2002. Assessed as "attaining some uses" and placed on the Planning List due to selenium exceedance.
			Mercury (total) µg/L	0.6 (FC)	<0.5 - 0.86	1 of 17	Attaining	
			Selenium (total) µg/L	2 (A&Ww chronic)	<5 - 5.7	1 of 1 event	Inconclusive	
			Turbidity (former standard) NTU	50 (A&Ww)	3 - 80	2 of 19	Attaining	

TABLE 5. BILL WILLIAMS WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
Big Sandy River Rupley - Alamo Lake North AZ15030201-001 A&Ww, FC, FBC, AgL	ADEQ Ambient Monitoring Near Signal BWBSR011.20 100457	1998 - 1 field 1999 - 4 field 2002 - 2 full suites	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	5.2 - 8.4 (62 - 110%)	2 of 7		
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	1998-2002 7 sampling events	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	5.2 - 8.4 (62 - 110%)	2 of 7	Inconclusive	ADEQ collected 7 samples in 1998-2002. Assessed as "inconclusive" and placed on the Planning List due to low dissolved oxygen and missing core parameters: <i>Escherichia coli</i> , dissolved metals (copper, cadmium, and zinc), and total metals (mercury, copper, and lead).
Bill Williams River Point B - Colorado River AZ15030204-001 A&Ww, FC, FBC, AgL	USGS Fixed Station #09426600 At Mineral Wash near Planet BWBWR005.88 100924	1998 - 2 partial suites 1999 - 2 partial suites 2000 - 2 partial suites 2001 - 2 partial suites 2002 - 3 partial suites	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	5.3 - 7.5 (49 - 95% saturation)	1 of 11		
			Turbidity (former standard) NTU	50 (A&Ww)	1 - 69	1 of 8		
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Attaining AgL Inconclusive	1998 -2002 11 sampling events	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	5.3 - 7.5 (49 - 95%)	1 of 11	Attaining	USGS collected 11 samples in 1998-2000. Assessed as "attaining some uses" and placed on the Planning List due to exceedance of the former turbidity standard. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.
			Turbidity (former standard) NTU	50 (A&Ww)	1 - 69	1 of 8	Inconclusive	Also on the Planning List due to missing core parameters: total metals (mercury, copper, and lead).
Boulder Creek unnamed wash at 34 41 14 / 113 03 34 - Wilder Creek AZ15030202-006B A&Ww, FC, FBC, AgL, AgL	Phelps Dodge Bagdad Mine Instream Monitoring Below Tungstona Mine Below Warm Spring Creek Tungstona - 1 BWBOU006.27	1998 - 4 field, metals 1999 - 1 metals 2000 - 3 metals 2001 - 4 metals 2002 - 1 metals	No exceedances					
			Mercury (dissolved) µg/L	0.01 (A&Ww chronic)	<0.2 - 3.4	4 of 4		Lab reporting limits for 13 other mercury samples were too high to use results for assessment.
	Phelps Dodge Bagdad Mine Instream Monitoring At road to Tungstona Mine Tungstona - 2 BWBOU005.86	1998 - 4 field, metals 1999 - 1 metals 2000 - 4 metals 2001 - 4 metals 2002 - 4 metals		2.4 (A&Ww acute)	<0.2 - 3.4	1 of 17		
				0.6 (FC - total)	<0.2 - 3.4	1 of 4		Dissolved mercury data compared to total mercury standards.
	Phelps Dodge Bagdad Mine Instream Monitoring Above Hillside Mine Hillside - 2 BWBOU004.30	1998 - 4 field, metals 1999 - 2 metals 2000 - 3 metals 2001 - 4 metals 2002 - 4 metals	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	<10 - 10	1 of 16		
				varies by hardness (A&Ww chronic)	<10 - 10	1 of 12		Lab reporting limits for 4 other copper samples were too high to use results for assessment.

TABLE 5. BILL WILLIAMS WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
			Mercury (dissolved) µg/L	0.01 (A&Ww chronic)	<0.2 - 2.9	2 of 2		Lab reporting limits for 11 other mercury samples were too high to use results for assessment.
				2.4 (A&Ww acute)	<0.2 - 2.9	1 of 4		
				0.6 (FC - total)	<0.2 - 2.9	1 of 16		Dissolved mercury data compared to total mercury standard.
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	<10 - 1900	1 of 16		
				varies by hardness (A&Ww chronic)	<10 - 1900	1 of 16		
			No exceedances					
	ADEQ TMDL Program Site N Above Wilder Creek BWBOU004.15	2000 - 1 partial suite 2001 - 6 partial suites						
	Summary Row A&Ww Impaired FC Attaining FBC Inconclusive Agl Inconclusive AgL Attaining	1998 - 2002 54 samples 24 sampling events	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	<10 - 10	1 of 18 events (in 2001)	Inconclusive	Phelps Dodge and ADEQ collected 54 samples at 4 sites in 1998 - 2002. EPA assessed this reach as "Impaired" due to mercury. Placed on the Planning List due to copper and zinc exceedances and missing core parameters: total boron and <i>Escherichia coli</i> .
				varies by hardness (A&Ww chronic)	<10 - 10	1 of 19 events	Inconclusive	
			Mercury (dissolved) µg/L	0.01 (A&Ww chronic)	<0.2 - 3.4	6 of 6 samples 5 of 5 events	Impaired	
				2.4 (A&Ww acute)	<0.2 - 3.4	1 of 17 events (in 2002)	Inconclusive	
				0.6 (FC - total)	<0.2 - 3.4	2 of 9	Inconclusive	
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	<10 - 1900	1 of 19 events (OK last 4 years)	Attaining	
				varies by hardness (A&Ww chronic)	<10 - 1900	1 of 19 events	Inconclusive	

TABLE 5. BILL WILLIAMS WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
Boulder Creek Wilder Creek - Copper Creek AZ15030202-005A A&Ww, FC, FBC, Agl, Agl	ADEQ TMDL Program Site L Below Wilder Creek BWBOU004.10	2001 - 1 field, metals 2002 - 2 field, metals	No exceedances					
	ADEQ TMDL Program Site JJ At upstream Hillside Mine tailings BWBOU003.90	2002 - 4 field, metals	Arsenic (total) µg/L	50 (FBC)	14 - 58	1 of 4		
			Copper (total) µg/L	500 (Agl)	<15 - 15,200	1 of 4		
			Copper (dissolved) µg/L	varies by hardness (A&Ww chronic)	<15 - 14,400	2 of 2		Lab reporting limits for 2 other copper samples were too high to use results for assessment.
				varies by hardness (A&Ww acute)	<15 - 14,400	2 of 4		
			Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	5.5 - 8.5	1 of 3		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.
			Manganese (total) µg/L	10,000 (Agl)	30 - 23,400	1 of 4		
			Mercury (dissolved) µg/L	0.01 (A&Ww chronic)	0.04	1 of 1		
			pH SU	6.5 - 9.0 (A&Ww, FBC, Agl) 4.5 - 9.0 (Agl)	3.7 - 6.1	1 of 4		
			Zinc (total) µg/L	10,000 (Agl)	100 - 129,000	1 of 3		
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	60 - 115,000	2 of 4		
				varies by hardness (A&Ww chronic)	60 - 115,000	2 of 4		
	ADEQ TMDL Program Site J Above Hillside Mine BWBOU003.81	2001 - 1 field, metals 2002 - 5 field, metals	Lead (total) µg/L	15 (FBC)	<5 - 17	1 of 6		
	ADEQ TMDL Program Site H Below Hillside Mine BWBOU003.72	2001 - 1 field, metals 2002 - 12 field, metals	Arsenic (total) µg/L	50 (FBC)	<5 - 287	9 of 13		
				200 (Agl)	<5 - 287	4 of 13		

TABLE 5. BILL WILLIAMS WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
			Copper (dissolved) µg/L	varies by hardness (A&Ww chronic)	<15 - 80	1 of 10		Lab reporting limits for 3 other samples were too high to use results for assessment.
				varies by hardness (A&Ww acute)	<15 - 80	1 of 13		
			Manganese (total) µg/L	10,000 (Agl)	40 - 11,800	2 of 13		
	ADEQ TMDL Program Site G Above Butte Creek and below lower tailings piles BWBOU003.42	2001 - 1 field, metals 2002 - 6 field, metals	Arsenic (total) µg/L	50 (FBC)	<5 - 74	4 of 7		
	Phelps Dodge Bagdad Mine Instream Monitoring Below Hillside Mine Hillside - 1 BWBOU003.31	1998 - 4 field, metals 1999 - 1 metals 2000 - 4 metals 2001 - 4 metals 2002 - 4 metals	Arsenic (dissolved) µg/L	50 (FBC - total)	15 - 400	9 of 9		Dissolved arsenic data compared to total arsenic standards.
				200 (Agl - total)	15 - 400	3 of 6		
				190 (A&Ww chronic)	15 - 400	4 of 17		
			Mercury (dissolved) µg/L	0.01 (A&Ww chronic)	<0.2 - 3.8	2 of 2 (1 at detection limit)		Lab reporting limits for 15 other samples were too high to use results for assessment.
				2.4 (A&Ww acute)	<0.2 - 3.8	1 of 17		
				0.6 (FC - total)	<0.2 - 3.8	1 of 4		Dissolved mercury data compared to total mercury standard.
			pH SU	6.5 - 9.0 (A&Ww, FBC, Agl, Agl)	7.5 - 9.5	1 of 17		
			Selenium (total) µg/L	2 (A&Ww)	<1 - 4	1 of 4		
	ADEQ TMDL Program Site E Below Butte Creek BWBOU003.15	2001 - 1 field, metals 2002 - 5 field, metals	Arsenic (total) µg/L	50 (FBC)	11 - 76	3 of 6		
	Phelps Dodge Bagdad Mine Instream Monitoring Above Copper Creek Boulder - 2 BWBOU002.78	1998 - 4 field, metals 1999 - 1 metals 2000 - 3 metals 2001 - 3 metals 2002 - 2 metals	Arsenic (total) µg/L	50 (FBC)	45 - 53	1 of 2		

TABLE 5. BILL WILLIAMS WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row	1998 - 2002	Arsenic (dissolved) µg/L	190 (A&Ww chronic)	5 - 400	4 of 30 events (4 of 17 at Hillside site)	Not attaining	Phelps Dodge and ADEQ collected 70 samples at 8 sites in 1998-2002. EPA assessed this reach as "Impaired" due to mercury, from Wilder to Butte Creek. Reach is "not attaining" for: Arsenic: from Wilder to Copper Creek (entire reach). Copper and zinc: Wilder to Butte Creek. TMDLs were approved by EPA in August 2004. On the Planning List due to selenium exceedances and missing core parameters: <i>Escherichia coli</i> and total boron.
	A&Ww Impaired FC Inconclusive FBC Not attaining AgI Inconclusive AgL Not attaining	70 samples 30 sampling events	Arsenic (total) µg/L	50 (FBC)	<5 - 400	26 of 45	Not attaining	
				200 (AgL)	<5 - 400	8 of 42	Not attaining	
			Copper (dissolved) µg/L	varies by hardness (A&Ww chronic)	<15 - 14,400	2 of 30 events	Not attaining	
				varies by hardness (A&Ww acute)	<15 - 14,400	2 of 30 events (In 2001)	Not attaining	
			Copper (total) µg/L	500 µg/L (AgL)	<15 - 15,200	1 of 58	Attaining	
			Lead (total) µg/L	15 (FBC)	<5 - 17	1 of 13	Attaining	
			Manganese (total) µg/L	10,000 (AgI)	40 - 11,800	3 of 33	Attaining	
			Mercury (dissolved) µg/L	0.01 (A&Ww chronic)	<0.2 - 3.8	3 of 3 events	Impaired	
				2.4 (A&Ww acute)	<0.2 - 3.8	1 of 17 events (In 2002)	Inconclusive	
			Mercury (dissolved) µg/L	0.6 (FC - total)	<0.2 - 3.8	1 of 6	Inconclusive	
			pH SU	6.5 - 9 (A&Ww, FBC, AgL)	3.7 - 9.5	1 of 70 too low 1 of 70 too high	Attaining	
				4.5 - 9.0 (AgI)	3.7 - 9.5	1 of 70 too low 1 of 70 too high	Attaining	
			Selenium (total) µg/L	2 (A&Ww chronic)	<1 - 4	1 of 4 events	Inconclusive	
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	<0.01 - 115,000	2 of 30 events (In 2001)	Not attaining	
				varies by hardness (A&Ww chronic)	<0.01 - 115,000	2 of 30 events	Not attaining	
			Zinc (total) µg/L	10,000 (AgI)	<0.01 - 129,000	1 of 33	Attaining	

TABLE 5. BILL WILLIAMS WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
Boulder Creek Copper Creek - Burro Creek AZ15030202-005B A&Ww, FC, FBC, AgI, AgL	ADEQ TMDL Program Site B Below Copper Creek BWBOU002.70	2001 - 1 field, metals 2002 - 6 field, metals	Arsenic (total) µg/L	50 (FBC)	11 - 52	1 of 7		
	Phelps Dodge Bagdad Mine Instream Monitoring Below Copper Creek Boulder - 1 BWBOU002.68	1998 - 4 field, metals 1999 - 1 metals 2000 - 4 metals 2001 - 4 metals 2002 - 4 metals	Mercury (dissolved) µg/L	0.01 (A&Ww chronic)	<0.2 - 7.2	1 of 1		Lab reporting limits for 16 other dissolved mercury samples were too high to use results for assessment. Dissolved mercury data compared to total mercury standard.
				2.4 (A&Ww acute)	<0.2 - 7.2	1 of 17		
				0.6 (FC - total)	<0.2 - 7.2	1 of 8		
			Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	3.9 - 10.5	1 of 5		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.
			Lead (total) µg/L	15 (FBC)	<5 - 34	1 of 6		
	Phelps Dodge Bagdad Mine Instream Monitoring At Mulholland Wash Boulder - 4 BWBOU000.95	1998 - 3 field, metals 1999 - 1 metals 2000 - 4 metals 2001 - 4 metals 2002 - 1 metals	Selenium (total) µg/L	2 (A&Ww chronic)	<1 - 3	1 of 2		
	Summary Row A&Ww Inconclusive FC Attaining FBC Inconclusive AgI Inconclusive AgL Attaining	1998 - 2002 43 samples 24 sampling events	Arsenic (total) µg/L	50 (FBC)	<10 - 52	1 of 21	Attaining	Phelps Dodge and ADEQ collected 38 samples at 4 sites in 1998-2002. Assessed as "Inconclusive" and placed on the Planning List due to mercury and selenium exceedances and missing core parameters: <i>Escherichia coli</i> and total boron.
			Lead (total) µg/L	15 (FBC)	<5 - 34	1 of 13	Attaining	
			Mercury (dissolved) µg/L	0.01 (A&Ww chronic)	<0.2 - 7.2	1 of 1 event	Inconclusive	
				2.4 (A&Ww acute)	<0.2 - 7.2	1 of 13 events (in 2002)	Inconclusive	
				0.6 (FC - total)	<0.2 - 7.2	1 of 14	Attaining	
			Selenium (total) µg/L	2 (A&Ww chronic)	<1 - 3	1 of 4 events	Inconclusive	
Burro Creek Francis Creek - Boulder Creek AZ15030202-008 A&Ww, FC, FBC, AgI Unique Water	Phelps Dodge Bagdad Mine Instream Monitoring Above Boulder Creek Burro - 3 BWBRO0011.54	1998 - 4 field, metals 1999 - 1 metals 2000 - 4 metals 2001 - 4 metals 2002 - 4 metals	Copper (dissolved) µg/L	varies by hardness (A&Ww chronic)	<10 - 20	1 of 17		Lab reporting limits for 16 other mercury samples were too high to use results for assessment.
				varies by hardness (A&Ww acute)	<10 - 20	1 of 17		
			Mercury (dissolved) µg/L	0.01 (A&Ww chronic)	<0.2 - 0.5	1 of 1		

TABLE 5. BILL WILLIAMS WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row	1998-2002	Copper (dissolved) µg/L	varies by hardness (A&Ww chronic)	<10 - 20	1 of 17 events	Inconclusive	Phelps Dodge collected 17 samples in 1998-2002. Assessed as "attaining some uses" and placed on the Planning List due to copper and mercury exceedances and missing core parameters: dissolved oxygen and <i>Escherichia coli</i> .
	A&Ww Inconclusive FC Attaining FBC Inconclusive AgL Attaining	17 sampling events		varies by hardness (A&Ww acute)	<10 - 20	1 of 17 events (In 2002)	Inconclusive	
			Mercury (dissolved) µg/L	0.01 (A&Ww chronic)	<0.2 - 0.5	1 of 1 event	Inconclusive	
Burro Creek Boulder Creek - Black Canyon AZ15030202-004 A&Ww, FC, FBC, AgL	ADEQ Ambient Monitoring Below Boulder Creek BWBRO011.53 100403	1999 - 1 full suite 2000 - 3 full suites 2001 - 2 full + 1 partial suite 2002 - 3 full suites	Turbidity (former standard) NTU	50 (A&Ww)	1 - 65	1 of 9		All core parameters collected at this site.
	Phelps Dodge Bagdad Mine Instream Monitoring Below Mammoth Wash Burro 4 BWBOR009.67	1998 - 4 field, metals 1999 - 1 field, metals 2000 - 3 field, metals 2001 - 3 field, metals 2002 - 2 field, metals	No exceedances					
	Phelps Dodge Bagdad Mine Instream Monitoring At Suicide Wash Burro 2 BWBOR008.75	1998 - 4 field, metals 1999 - 1 field, metals 2000 - 4 field, metals 2001 - 4 field, metals 2002 - 3 field, metals	Mercury (dissolved) µg/L	0.01 (A&Ww chronic)	<0.2 - 0.8	3 of 3		Lab reporting limits for 13 other mercury samples were too high to use results for assessment.
				0.6 (FC - total)	<0.2 - 0.8	2 of 9		Dissolved mercury data compared to total mercury standard.
	ADEQ Ambient Monitoring Below 6-mile Crossing BWBRO008.56 101365	2002 - 2 full suites	No exceedances					
	Summary Row	1998 - 2002	Turbidity (former standard) NTU	50 (A&Ww)	1 - 65	1 of 19	Attaining	Phelps Dodge and ADEQ collected 51 samples in 1998-2002. EPA assessed this reach as "impaired" due to mercury exceedances.
	A&Ww Impaired FC Attaining FBC Attaining AgL Attaining	51 samples 18 sampling events	Mercury (dissolved) µg/L	0.01 (A&Ww chronic)	<0.2 - 0.8	3 of 3 events	Impaired	
				0.6 (FC - total)		2 of 26	Attaining	

TABLE 5. BILL WILLIAMS WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
Butte Creek headwaters - Boulder Creek AZ15030202-163 A&Ww, FBC, FC (tributary rule)	Phelps Dodge Bagdad Mine Permit Monitoring At Butte Creek Butte - 1	1998 - 4 field, metals 1999 - 1 metals 2000 - 3 metals 2001 - 2 metals 2002 - 1 metals	Mercury (dissolved) µg/L	0.01 (A&Ww chronic)	<0.2 - 1.0	2 of 2		Lab reporting limits for 5 other mercury samples were too high to use results for assessment.
			Mercury (total) µg/L	0.6 (FC)	<0.2 - 1.0	1 of 7		
			Selenium µg/L	2 (A&Ww chronic)	<1 - 8	1 of 4		
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive	1998-2000 3 sampling events	Mercury (dissolved) µg/L	0.01 (A&Ww chronic)	<0.2 - 1.0	2 of 2 events	Inconclusive	Phelps Dodge collected 8 samples in 1998- 2000 at this site. Assessed as "Inconclusive" and placed on the Planning List due to mercury and selenium exceedances and missing core parameters: dissolved oxygen and <i>Escherichia coli</i> .
			Mercury (total) µg/L	0.6 (FC)	<0.2 - 1.0	1 of 7	Inconclusive	
			Selenium (total) µg/L	2 (A&Ww chronic)	<1 - 8	1 of 4 events	Inconclusive	
Date Creek Cottonwood Creek - unnamed reach 15030203-008 AZ15030203-003 A&Ww, FBC, FC, AgL	ADEQ Ambient Monitoring Above Date Creek Ranch BWDAT019.44 100529	2002 - 2 full suites	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	2002 2 sampling events	No exceedances					Insufficient monitoring data to assess.
Francis Creek headwaters - Burro Creek AZ15030202-012 A&Ww, FBC, FC, DWS, AgL Unique Water	ADEQ Ambient Monitoring Above Spencer Creek BWFRA001.73 100556	2002 - 2 full suites	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive AgL Inconclusive	2002 2 sampling events	No exceedances					Insufficient monitoring data to assess.
Kirkland Creek Skull Valley - Santa Maria River AZ15030203-015 A&Ww, FBC, FC, AgL, AgL	ADEQ Ambient Monitoring Ritter's Ranch (Kirkland) BWKRK009.77 100408	2002 - 2 full suites	<i>Escherichia coli</i> CFU/100 mL	235 (FBC)	7 - 436	1 of 1		
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	2002 2 sampling events	<i>Escherichia coli</i> CFU/100 mL	235 (FBC)	7 - 436	1 of 2 events (insufficient events)	Inconclusive	Insufficient monitoring data to assess. Placed on the Planning List due to <i>Escherichia coli</i> exceedance.

TABLE 5. BILL WILLIAMS WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
Santa Maria River Bridle Wash - Date Creek AZ15030203-009 A&Ww, FC, FBC, Agl, AgL	ADEQ Fixed Station Network Below Highway 93 bridge BWSMR013.57 100399	1999 - 1 full suite 2000 - 4 full suites 2001 - 4 full suites 2002 - 5 full suites	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	2.7 - 9.5 (35 - 115%)	2 of 14		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.
			<i>Escherichia coli</i> CFU/100 mL	235 (FBC)	<2 - 390	1 of 14		
	Summary Row A&Ww Attaining FC Attaining FBC Inconclusive Agl Attaining AgL Attaining	1999 - 2002 14 sampling events	<i>Escherichia coli</i> CFU/100 mL	235 (FBC)	<2 - 390	1 of 14 events (occurred in 2001)	Inconclusive	ADEQ collected 14 samples in 1998 - 2002. Assessed as "attaining some uses" and placed on the Planning List due to <i>Escherichia coli</i> exceedance.
Trout Creek Cow Creek - Knight Creek AZ15030201-014 A&Ww, FC, FBC, AgL	ADEQ Ambient Monitoring Above Divide Canyon BWTRT006.15 100670	2002 - 1 full suite	No exceedances					
	ADEQ Fixed Station Network Near Wikieup BWTRT001.79 100397	1999 - 3 full suites 2000 - 4 full suites 2001 - 4 full suites 2002 - 5 full suites	No exceedances					
	Summary Row A&Ww Attaining FC Attaining FBC Attaining AgL Attaining	1999-2002 17 sampling events	No exceedances					ADEQ collected 17 samples in 1999-2002. Assessed as "attaining all uses."
Wilder Creek headwaters - Boulder Creek AZ15030202-007 A&Ww, FC, FBC (tributary rule)	ADEQ TMDL Program Site M Near Boulder Creek BWWLD000.27	2000 - 1 field, metals 2001 - 6 field, metals	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive	2000-2001 7 sampling events	No exceedances					ADEQ collected 7 samples in 2000-2001 as part of the Boulder Creek TMDL. Assessed as "inconclusive" and placed on the Planning List due to missing core parameters: turbidity/SSC, <i>Escherichia coli</i> , dissolved cadmium, and total mercury.

TABLE 5. BILL WILLIAMS WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
LAKES MONITORING DATA								
Alamo Lake AZL15030204-0040A A&Ww, FC, FBC, AgL	USFWS/Corps of Engineers Ambient Monitoring BWALA-1	1998 - 10 partial suites 1999 - 1 full + 7 partial suites 2000 - 4 full + 8 partial suites 2001 - 3 full + 9 partial suites 2002 - 3 full + 7 partial suites	Ammonia mg/L	varies by pH and temperature (A&Ww chronic)	<0.01 - 0.72	2 of 36		
			Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	2.7 - 14.5	4 of 47		
			pH SU	6.5 - 9.0 (A&Ww, FBC, AgL)	7.4 - 10.9	14 of 47		
	USFWS/Corps of Engineers Ambient Monitoring BWALA-2	1998 - 10 partial suites 1999 - 8 partial suites 2000 - 1 full + 11 partial suites 2001 - 3 full + 9 partial suites 2002 - 3 full + 7 partial suites	Ammonia mg/L	varies by pH and temperature (A&Ww chronic)	<0.01 - 0.69	1 of 36		
			Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	2.0 - 16.3	3 of 47		
			pH SU	6.5 - 9.0 (A&Ww, FBC, AgL)	7.1 - 10.9	11 of 47		
	USFWS/Corps of Engineers Ambient Monitoring BWALA-3	1998 - 10 partial suites 1999 - 8 partial suites 2000 - 1 full + 11 partial suites 2001 - 3 full + 9 partial suites 2002 - 3 full + 7 partial suites	Ammonia mg/L	varies by pH and temperature (A&Ww chronic)	<0.01 - 0.42	1 of 36		
			Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	2.0 - 14.7	2 of 47		
			pH SU	6.5 - 9.0 (A&Ww, FBC, AgL)	7.7 - 10.5	9 of 47		
	USFWS/Corps of Engineers Ambient Monitoring BWALA-4	1998 - 10 partial suites 1999 - 8 partial suites 2000 - 1 full + 11 partial suites 2001 - 1 full + 11 partial suites 2002 - 2 full + 8 partial suites	Ammonia mg/L	varies by pH and temperature (A&Ww chronic)	<0.01 - 0.6	2 of 36		
			Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	1.7 - 16.4	2 of 46		
			pH SU	6.5 - 9.0 (A&Ww, FBC, AgL)	7.4 - 10.6	12 of 46		
	ADEQ Lakes Program BWALA - A (deepest) 101350	2002 - 2 field, 1 <i>Escherichia coli</i>	No exceedances					
	ADEQ Lakes Program BWALA - B (mid lake) 101351	2002 - 2 field, 1 <i>Escherichia coli</i>	No exceedances					

TABLE 5. BILL WILLIAMS WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row	1998-2002						
	A&Ww Impaired FC Impaired FBC Impaired AgL Impaired	212 samples 54 sampling events	Ammonia mg/L	varies by pH and temperature (A&Ww chronic)	<0.01 - 0.72	6 of 144 samples 2 of 36 events	Impaired	US Fish and Wildlife Service collected 208 samples during 52 sample events in 1998-2002. ADEQ collected field measurements at two sites during 4 sampling events. Assessed as "Impaired" due to ammonia exceedances, high pH, and mercury in fish tissue.
			Dissolved oxygen mg/L	> 6.0 (90% saturation (A&Ww))	1.7 - 15.3	11 of 190	Attaining	"EPA placed this reach on the 2002 303(d) List for mercury in fish tissue. Once listed, the surface water cannot be delisted until a TMDL is complete or there are sufficient data collected to indicate that mercury in fish tissue is no longer a concern. A fish consumption advisory was issued in 2004.
Coors Lake AZL15030202-5000 A&Ww, FC, FBC	No water quality data	Data not shown No water quality data						
	Summary Row							
	A&Ww Inconclusive FC Impaired FBC Inconclusive							EPA assessed this lake as "Impaired" due to mercury in fish tissue. A fish consumption advisory was issued in 2004.

TABLE 6. BILL WILLIAMS WATERSHED – ASSESSMENTS, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
BILL WILLIAMS WATERSHED – STREAM ASSESSMENTS				
Big Sandy River Deluge Wash - Tule Wash 8 miles AZ15030201-011	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List due to: 1. Former turbidity standard exceedance (1 of 4 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring. 2. <u>Missing core parameters</u> : <i>Escherichia coli</i> , dissolved metals (cadmium, copper, and zinc) and total metals (copper, lead, and mercury).		
Big Sandy River Sycamore Creek - Burro Creek 14 miles AZ15030201-004	A&Ww Inconclusive FC Attaining FBC Attaining Agl Attaining Category 2 — Attaining Some Uses	On the Planning List due to <u>chronic selenium</u> exceedance (1 of 1 sampling event).		
Big Sandy River Rupley Wash - Alamo Lake North 10 miles AZ15030201-001	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List due to: 1. Low dissolved oxygen (2 of 7 samples). 2. <u>Missing core parameters</u> : <i>Escherichia coli</i> , dissolved metals (cadmium, copper, and zinc), and total metals (copper, lead, and mercury).		
Bill Williams River Point B - Colorado River 15 miles AZ15030204-001	A&Ww Inconclusive FC Inconclusive FBC Attaining Agl Inconclusive Category 2 — Attaining Some Uses	On the Planning List due to: 1. Former turbidity standard exceedance (1 of 8 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring. 2. <u>Missing core parameters</u> : total metals (copper, lead, and mercury).		
Boulder Creek unnamed wash at 34 41 14 / 113 03 34 - Wilder Creek 14 miles AZ15030202-006B (Reach was split into coldwater and warmwater segments since the last assessment. No current data in 006A.)	A&Ww Impaired FC Attaining FBC Inconclusive Agl Inconclusive Agl Attaining Category 5 — Impaired	On the Planning List due to: 1. <u>Acute and chronic copper</u> exceedance (1 of 18 events, occurred in 2001). 2. <u>Chronic zinc</u> exceedance (1 of 19 events). 3. <u>Missing core parameters</u> : total boron and <i>Escherichia coli</i> .	Mercury added to the 2004 303(d) List by EPA. <u>Delist fluoride</u> due to change in fluoride standards. No exceedances occurred under the new standard.	In 2003, ADEQ began a watershed-wide TMDL investigation for sources of mercury impacting Alamo Lake. This included Burro Creek, Boulder Creek, Big Sandy River, and the Santa Maria sub-basins.
Boulder Creek Wilder Creek - Copper Creek 3 miles AZ15030202-005A	A&Ww Impaired FC Inconclusive FBC Not attaining Agl Inconclusive Agl Not attaining Category 5 — Impaired	On the Planning List due to: 1. <u>Chronic selenium</u> exceedances (1 of 4 sampling events). 2. <u>Missing core parameters</u> : total boron and <i>Escherichia coli</i> . 3. TMDL follow-up monitoring for arsenic (entire reach), copper and zinc (Wilder to Butte Creek). Chronic arsenic exceedances in 4 of 30 sampling events, total arsenic exceedances in 26 of 45 samples, chronic and acute copper exceedances in 2 of 30 sampling events, and chronic and acute zinc exceedances 2 of 30 sampling events. <u>Remove beryllium</u> from the Planning List. Standards were revised in 2002. No exceedances under the new standards.	Mercury added to the 2004 303(d) List by EPA, from Wilder to Butte Creek. <u>Delist arsenic, copper and zinc</u> . TMDLs were approved by EPA in 2004. Placed on the Planning List for TMDL follow-up monitoring.	In 2003, ADEQ began a watershed-wide TMDL investigation for sources of mercury impacting Alamo Lake. This included Burro Creek, Boulder Creek, Big Sandy River, and the Santa Maria sub-basins. Ongoing coordination between the Bureau of Land Management, Arizona State Land Department, and private owners to conduct cleanup activities at all three sites.

TABLE 6. BILL WILLIAMS WATERSHED – ASSESSMENTS, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Boulder Creek Copper Creek - Burro Creek 5 miles AZ15030202-005B	A&Ww Inconclusive FC Attaining FBC Inconclusive Agl Inconclusive Agl Attaining Category 2 – Attaining Some Uses	On the Planning List due to: 1. <u>Acute mercury</u> exceedance (1 of 13 sampling events, occurred in 2002) and <u>chronic mercury</u> exceedance (1 of 1 sampling event). 2. <u>Chronic selenium</u> exceedance (1 of 4 sampling events). 3. <u>Missing core parameters</u> : total boron and <i>Escherichia coli</i> .		In 2003, ADEQ began a watershed-wide TMDL investigation for sources of mercury impacting Alamo Lake. This included Burro Creek, Boulder Creek, Big Sandy River, and the Santa Maria sub-basins.
Burro Creek Francis Creek - Boulder Creek 14 miles AZ15030202-008 Unique Water	A&Ww Inconclusive FC Attaining FBC Inconclusive Agl Attaining Category 2 – Attaining Some Uses	On Planning List due to: 1. <u>Acute and chronic copper</u> exceedance (1 of 17 sampling events, occurred in 2002). 2. <u>Chronic mercury</u> exceedance (1 of 1 sampling event). 3. <u>Missing core parameters</u> : dissolved oxygen and <i>Escherichia coli</i> . Remove <u>turbidity</u> from the Planning List. Current monitoring indicates 0 exceedances in 4 samples.		
Burro Creek Boulder Creek - Black Canyon 17 miles AZ15030202-004	A&Ww Impaired FC Attaining FBC Attaining Agl Attaining Category 5 - Impaired		<u>Mercury</u> added to the 2004 303(d) List by EPA.	In 2003, ADEQ began a watershed-wide TMDL investigation for sources of mercury impacting Alamo Lake. This included Burro Creek, Boulder Creek, Big Sandy River, and the Santa Maria sub-basins.
Butte Creek headwaters - Boulder Creek 3 miles AZ15030202-163	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 – Inconclusive Agl and AgL designated uses no longer apply to this reach due to changes in the tributary rule.	On Planning List due to: 1. <u>Chronic selenium</u> exceedance (1 of 4 sampling events). 2. <u>Chronic mercury</u> exceedances (2 of 2 sampling events). 3. <u>Missing core parameters</u> : dissolved oxygen and <i>Escherichia coli</i> .		In 2003, ADEQ began a watershed-wide TMDL investigation for sources of mercury impacting Alamo Lake. This included Burro Creek, Boulder Creek, Big Sandy River, and the Santa Maria sub-basins.
Date Creek Cottonwood Creek - unnamed tributary 15030203-008 35 miles AZ15030203-003	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 – Inconclusive	On the Planning List due to insufficient monitoring data to assess (2 samples).		
Francis Creek headwaters - Burro Creek 24 miles AZ15030202-012 Unique Water	A&Ww Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive Category 3 – Inconclusive	On the Planning List due to: 1. Insufficient monitoring data to assess (2 samples). 2. Added in 2002 due to exceedance of former <u>turbidity</u> standard (2 of 12 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.		
Kirkland Creek Skull Valley - Santa Maria River 23 miles AZ15030203-015	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 3 – Inconclusive	On the Planning List due to: 1. Insufficient monitoring data to assess (2 samples). 2. <u><i>Escherichia coli</i></u> exceedance (1 of 2 sampling events).		
Santa Maria River Bridle Wash - Date Creek 25 miles AZ15030203-009	A&Ww Attaining FC Attaining FBC Inconclusive Agl Attaining Agl Attaining Category 2 – Attaining Some Uses	On the Planning List due to <u><i>Escherichia coli</i></u> exceedance (1 of 14 events, occurred in 2001).		

TABLE 6. BILL WILLIAMS WATERSHED -- ASSESSMENTS, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Trout Creek Cow Creek - Knight Creek 32 miles AZ15030201-014	A&Ww Attaining FC Attaining FBC Attaining AgL Attaining Category 1 — Attaining All Uses			
Wilder Creek headwaters - Boulder Creek 15 miles AZ15030202-007	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 — Inconclusive	On the Planning List due to <u>missing core parameters</u> : <i>Escherichia coli</i> , dissolved cadmium, total mercury, and turbidity/SSC.		
BILL WILLIAMS WATERSHED -- LAKE ASSESSMENTS				
Alamo Lake 1,414 acres AZL15030204-0040A	A&Ww Impaired FC Impaired FBC Impaired AgL Impaired Category 5 — Impaired Trophic Status -- Eutrophic - Hypereutrophic	On the Planning List due to <u>missing core parameters</u> : <i>Escherichia coli</i> , dissolved metals (cadmium, copper, and zinc), and total metals (copper and lead).	Add ammonia to the 303(d) List due to chronic ammonia exceedances (2 of 36 sampling events). On 303(d) List (since 1996) due to <u>high pH</u> . Exceeded standards in 46 of 189 samples. EPA placed this reach on the 2002 303(d) List because of high concentrations of <u>mercury in fish tissue</u> . EPA's listing was based on a violation of narrative water quality standards. Arizona's Impaired Water Identification Rule requires adoption of narrative implementation procedures before the state may use evidence of narrative violations in a listing decision, but once listed the surface water cannot be delisted until a TMDL is complete or sufficient data are collected to indicate that mercury in fish tissue is no longer a concern. ADEQ is currently collecting data and investigating potential mercury sources in support of completing a TMDL. A fish consumption advisory was issued in 2004. <u>Delist dissolved oxygen</u> . Attaining uses with only 11 exceedances in 190 samples. <u>Delist sulfide</u> . New sulfide standards were adopted in 2002. No exceedances of the new standard.	Mercury does not stay in an aqueous state and bioaccumulates rapidly. Additionally, most laboratory reporting limits are not low enough to assess chronic mercury standards; therefore, lack of exceedances in the water column does not provide sufficient information about mercury problems in the lake. In 2003, ADEQ began a watershed-wide TMDL investigation for sources of mercury impacting Alamo Lake. This included Burro Creek, Boulder Creek, Big Sandy River, and the Santa Maria sub-basins.
Coors Lake 1,129 acres AZL15030202-5000	A&Ww Inconclusive FC Impaired FBC Inconclusive Category 5 — Impaired		Mercury in fish tissue added to the 2004 303(d) List by EPA.	



The Colorado River flowing through the cliffs of the Grand Canyon.

The Colorado - Grand Canyon Watershed

This watershed is defined by the Colorado River drainage area, beginning in Arizona at Lake Powell, through the Grand Canyon National Park, to Hoover Dam at Lake Mead. It does not include the Little Colorado River drainage. The watershed contains spectacular incised canyons formed by erosion of sedimentary formations (e.g., sandstone), as well as volcanically formed mountains and high plateaus.

Land ownership is divided approximately as: 15% private land, 5% state land, 45% federal land, and 25% Tribal lands. Most of the 16,437 square miles in this watershed are sparsely populated, with an approximate population of 67,500 people (2000 census). The largest communities are Kingman and Williams. Land use is primarily open grazing, recreation, and silviculture (forestry), with scattered mining districts. The Grand Canyon National Park, Kaibab National Forest, Lake Mead National Recreation Area, and Glen Canyon National Recreation Area are all located within the watershed, and all have restricted land uses to protect natural resources. These federal lands also draw a large number of tourists and recreationists.

Elevations range from 1,000 feet (above sea level) along the Colorado River to 10,400 feet near Flagstaff. The majority of the watershed is between 5,000-7,000 feet in elevation, with high desert fauna and flora, including coldwater aquatic communities where perennial waters exist.

The assessment – Assessments were completed for 24 stream reaches and two lakes. Of the 188 stream miles assessed, zero miles were attaining all uses and 67 miles (three reaches) were impaired or not attaining for at least one use. All others were inconclusive or attaining some uses. Of the 9,840 lake acres assessed, all were assessed as inconclusive or attaining some uses (none were assessed as attaining all uses or impaired).

A watershed assessment map follows on the next page, illustrating stream and lake assessments by category. The Colorado-Grand Canyon **monitoring table (Table 7)** following the map summarizes the water quality data used in the assessment. It is followed by the **assessment table (Table 8)**, which bridges current assessments with past assessments and impaired water identification. Important to note in this table are comments regarding previous 303(d) lists (what has been added and removed), category designations (1 through 5), references to potential actions by EPA, and status of TMDLs.

Detailed information on how to use these tables is found at the beginning of this chapter (p. IV-1). Assessment methods and criteria can be found in Chapter III.

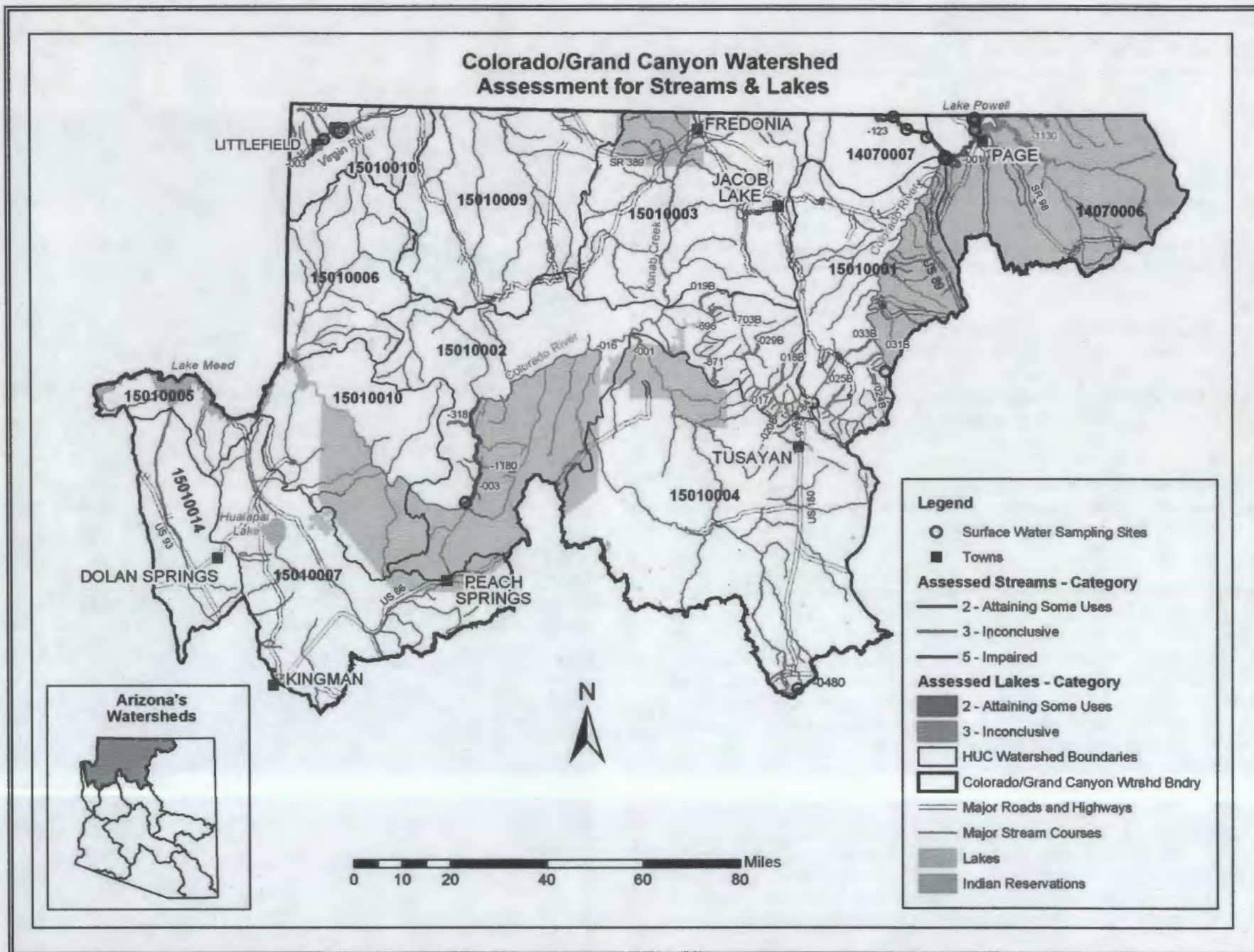


Figure 16. Watershed monitoring and assessments

TABLE 7. COLORADO - GRAND CANYON WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	USE SUPPORT	COMMENTS
STREAM MONITORING DATA								
Colorado River Lake Powell - Paria River AZ14070006-001 A&Wc, FC, FBC, DWS, Agl, AgL	USGS Fixed Station #09380000 At Lee's Ferry CMCLR327.39 100743	1998 - 6 partial suites 1999 - 6 partial suites 2000 - 6 partial suites 2001 - 4 partial suites 2002 - 4 partial suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.5 - 10.1 (99 - 63%)	1 of 25		
	Summary Row A&Wc Attaining FC Attaining FBC Attaining DWS Inconclusive Agl Inconclusive AgL Attaining	1996-2000 26 sampling events	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.5 - 10.1 (99 - 63%)	1 of 25	Attaining	USGS collected 26 samples 1998-2002. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: total fluoride and total boron.
Colorado River Parashant Canyon - Diamond Creek AZ15010002-003 A&Wc, FC, FBC, DWS, Agl, AgL	USGS Fixed Station #09404200 Above Diamond Creek CMCLR233.40 101483	1998 - 12 partial suites 1999 - 12 partial suites 2000 - 9 partial suites 2001 - 8 partial suites 2002 - 8 partial suites	Selenium (total) µg/L	2.0 (A&Wc chronic)	1 - 3.8	9 of 43		All 9 selenium exceedances occurred in 2000-2002.
			Suspended sediment concentration (SSC) mg/L	80 (geometric mean) (A&Wc)	12 - 1500	Geo means: 1998 = 455 1999 = 113 2000 = 101 2001 = 71 2002 = 84		Maximum base flow was calculated to be 23,400 cfs based on 20 years of flow data.
			Turbidity (former standard) NTU	10 (A&Wc)	0.4 - >1000	14 of 30		
	Summary Row A&Wc Impaired FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive AgL Inconclusive	1998-2002 49 sampling events	Selenium (total) µg/L	2.0 (A&Wc chronic)	1 - 3.8	9 of 43 events	Impaired	US Geological Survey collected 49 samples in 1998-2002. Assessed as "impaired" due to selenium and SSC exceedances.
			Suspended sediment concentration (SSC) mg/L	80 (geometric mean) (A&Wc)	12 - 1500	4 of 5 annual geo. means	Impaired	Also placed on the Planning List due to: 1. Former turbidity standard exceedances. 2. Missing core parameters: total boron, <i>Escherichia coli</i> and total metals (mercury, arsenic, manganese, copper, and lead).
			Turbidity (former standard) NTU	10 (A&Wc)	0.4 - >1000	14 of 30	Inconclusive (see comment)	Reach was on the 2002 303(d) List due to turbidity. Monitoring will be scheduled to determine whether bottom deposit violations are occurring.

TABLE 7. COLORADO - GRAND CANYON WATERSHED - 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE (A&Ww)	RANGE OF RESULTS	FREQUENCY EXCEEDED	USE SUPPORT	
Paria River Utah border - Colorado River AZ14070007-123 A&Ww, FC, FBC	ADEQ and Northern AZ Univ. TMDL Program Site 4 At mile marker 7.5 CMPAR022.37 101076	1998 - 1 field suite 1999 - 5 partial suites 2000 - 3 partial suites 2001 - 1 partial suite	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	4.8 - 10.6	3 of 11		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in the final assessment.
			Turbidity (former standard) NTU	50 (A&Ww)	4 - 492	8 of 11		
	ADEQ and Northern AZ Univ. TMDL Program Site 5 at mile marker 15 CMPAR013.79 101075	1998 - 1 partial suite 1999 - 5 partial suites 2000 - 4 partial suites 2001 - 1 field	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	4 - 10.7	3 of 11		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in the final assessment.
			Turbidity (former standard) NTU	50 (A&Ww)	0 - 441	8 of 11		
	ADEQ and Northern AZ Univ. TMDL Program Site 6 at mile marker 22.5 CMPAR007.95 101074	1998 - 1 partial suite 1999 - 5 partial suites 2000 - 4 partial suites 2001 - 1 partial suite	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	4.3 - 9.1	3 of 11		Low dissolved oxygen is due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in the final assessment.
			Turbidity (former standard) NTU	50 (A&Ww)	6.2 - 441	8 of 10		
	ADEQ and Northern AZ Univ. TMDL Program Site 7 at Lees Ferry CMPAR000.55 101073	1998 - 1 partial suite 1999 - 5 partial suites 2000 - 4 partial suites 2001 - 1 partial suite	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	4.3 - 8.2	4 of 11		Low dissolved oxygen is due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in the final assessment.
			Turbidity (former standard) NTU	50 (A&Ww)	7 - 441	8 of 11		
	USGS Special Investigation At Lees Ferry CMPAR001.03 101447	1998 - 66 SSC 1999 - 58 SSC 2000 - 50 SSC	Suspended sediment concentration (SSC) mg/L	80 (A&Ww) (geometric mean)	11 - 488,000	Geo means: 1998 = 2545 1999 = 2243 2000 = 1765		Maximum base flow was calculated to be 244 cfs based on 10 years of flow data.

TABLE 7. COLORADO - GRAND CANYON WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	USE SUPPORT	COMMENTS
	Summary Row	1998 - 2001						
	A&Ww Impaired FC Inconclusive FBC Inconclusive	222 samples 186 sampling events	Suspended sediment concentration (SSC) mg/L	80 (A&Ww) (geometric mean)	11 - 1,200,000	3 of 3 annual geo. means	Impaired	ADEQ's TMDL Program along with Northern Arizona University collected 48 samples at 4 sites in 1998 - 2001. USGS collected 174 suspended sediment concentration samples in 1998-2000. Assessed as "impaired" due to SSC exceedances.
			Turbidity (former standard) NTU	50 (A&Ww)	0 - 492	32 of 43	Inconclusive (see comment)	Reach is also on the Planning List due to exceedances of the former turbidity standard and missing core parameters: all except field parameters. Preliminary studies indicate that turbidity and SSC exceedances are a natural condition caused by erosion of sandstone cliffs. Laboratory data from NAU were not included. Lab QA/QC protocols were not fulfilled.
Virgin River Beaver Dam Wash - Big Bend Wash AZ15010010-003 A&Ww, FC, FBC, Agl, AgL	USGS Fixed Station # 9415000 At Littlefield, Az CMVGR010.18	1998 - 6 partial suites 1999 - 6 partial suites 2000 - 6 partial suites 2001 - 6 partial suites 2002 - 4 partial suites	Escherichia coli CFU/100 ml	235 (FBC)	12 - 3000	1 of 16		
			Selenium (total) µg/L	2 (A&Ww chronic)	<1 - 2.2	3 of 27		
			Suspended sediment concentration (SSC) mg/L	80 (A&Ww) (geometric mean)	23 - 18,300	Geo means: 1998 = 240 1999 = 169 2000 = 133		Maximum base flow was calculated to be 429 cfs based on 30 years of flow data. Insufficient SSC data in 2001 and 2002 to calculate a geometric mean.
			Turbidity (former standard) NTU	50 (A&Ww)	0.3 - 360	12 of 24		
	Summary Row	1998-2002						
	A&Ww Impaired FC Inconclusive FBC Attaining Agl Inconclusive Agl Inconclusive	28 sampling events	Escherichia coli CFU/100 ml	235 (FBC)	12 - 3000	1 of 16 (In 1999, 3 years with no exceedances after)	Attaining	USGS collected 28 samples in 1998-2002. Assessed as "impaired" due to selenium and SSC exceedances.
			Selenium (total) µg/L	2.0 (A&Ww chronic)	<1 - 2.2	3 of 27 events	Impaired	Also placed on the Planning List due to: 1. Former turbidity standard exceedances. 2. Missing core parameters: total boron, dissolved metals (cadmium, copper, and zinc), and total metals (mercury, copper, manganese, and lead).
			Suspended sediment concentration (SSC) mg/L	80 (A&Ww) (geometric mean)	23 - 18,300	3 of 3 annual geo. means	Impaired	Reach was on the 2002 303(d) List due to turbidity. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.
			Turbidity (former standard) NTU	50 (A&Ww)	1 - 380	12 of 24	Inconclusive (see comment)	

TABLE 7. COLORADO - GRAND CANYON WATERSHED - 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	USE SUPPORT	COMMENTS
LAKES MONITORING DATA								
Dogtown Reservoir AZL15010004-0480 A&Wc, FC, FBC, DWS, Agl, AgL	ADEQ and Northern AZ Univ. Lakes Program CMDOG - A (deepest) 100019	1999 - 1 field 2001 - 3 partial suites 2002 - 1 full suite	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.6 - 8.9 (72 - 140%)	1 of 5		Naturally occurring erosion of sandstone formations may be the cause of turbidity.
			pH SU	6.5 - 9.0 (A&Wc, FBC, DWS, Agl, AgL)	7.2 - 9.6	2 of 5		
			Selenium (total) µg/L	2.0 (A&Wc chronic)	< 2 - 3	1 of 4		
			Turbidity (former standard) NTU	10 (A&Wc)	8 - 75	3 of 4		
	ADEQ and Northern AZ Univ. Lakes Program CMDOG - BR (boat ramp) 101319	2002 - 1 <i>Escherichia coli</i>	OK					
	Summary Row A&Wc Inconclusive FC Attaining FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive	1999-2002 6 samples 5 sampling events	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.6 - 8.9 (72 - 140%)	1 of 5	Inconclusive	ADEQ and Northern Arizona University collected 6 samples in 1999 - 2002. Assessed as "attaining some uses" and placed on the Planning List due to: 1. Low dissolved oxygen, 2. High pH, 3. Selenium exceedances, and 4. Former turbidity standard exceedances. Investigation into the causes and sources of turbidity will be scheduled during the next monitoring cycle for this watershed.
			pH SU	6.5 - 9.0 (A&Wc, FBC, DWS, Agl, AgL)	7.2 - 9.6	2 of 5	Inconclusive	
			Selenium (total) µg/L	2.0 (A&Ww chronic)	< 2 - 3	1 of 4 events	Inconclusive	
			Turbidity (former standard) NTU	10 (A&Wc)	8 - 75	3 of 4	Inconclusive (see comment)	

TABLE 7. COLORADO - GRAND CANYON WATERSHED - 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	USE SUPPORT	
Lake Powell AZL14070006-1130 A&Wc, FC, FBC, DWS, Agl, AgL	Glen Canyon Natl Recreation Area and Bureau of Reclamation Ambient Monitoring Gov't Housing Beach CMPOW - NPS1	1998 - 10 <i>E. coli</i> + turbidity 1999 - 11 <i>E. coli</i> + turbidity 2000 - 16 <i>E. coli</i> + turbidity 2001 - 4 <i>E. coli</i> + turbidity 2002 - 10 <i>E. coli</i> + turbidity	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	0 - 548	1 of 51		
	Glen Canyon Natl Recreation Area and Bureau of Reclamation Ambient Monitoring Stateline Marina CMPOW - State 1	1999 - 6 <i>E. coli</i> + turbidity 2000 - 16 <i>E. coli</i> + turbidity 2002 - 8 <i>E. coli</i> + turbidity	OK					
	Glen Canyon Natl Recreation Area and Bureau of Reclamation Ambient Monitoring Wahweap Bay Marina CMPOW - WWM1	1998 - 10 <i>E. coli</i> + turbidity 1999 - 13 <i>E. coli</i> + turbidity 2000 - 18 <i>E. coli</i> + turbidity 2001 - 8 <i>E. coli</i> + turbidity 2002 - 8 <i>E. coli</i> + turbidity	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	0 - 457	1 of 57		
	Glen Canyon Natl Recreation Area and Bureau of Reclamation Ambient Monitoring Picnic Beach CMPOW - WWPB	1998 - 10 <i>E. coli</i> + turbidity 1999 - 6 <i>E. coli</i> + turbidity 2000 - 8 <i>E. coli</i> + turbidity 2002 - 8 <i>E. coli</i> + turbidity	OK					
	Summary Row	1996 - 1997	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	0 - 548	2 of 170 (only 1 exceedance in the last 3 years)	Inconclusive	Bureau of Reclamation and Glen Canyon National Recreation Area collected 170 samples at 4 sites in the Arizona portion of Lake Powell.
	A&Wc Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive AgL Inconclusive	170 samples 60 sampling events						Assessed as "Inconclusive" due to 1 exceedance of the <i>Escherichia coli</i> standard within the last 3 years of monitoring and missing core parameters. Kept on the Planning List for further monitoring. (Note, no beach closures in Arizona during the past 5 years.) Missing core parameters: dissolved oxygen, turbidity, field pH, total boron, total fluoride, dissolved metals (copper, cadmium, and zinc), and total metals (mercury, arsenic, chromium, lead, manganese, copper, and lead).

TABLE 8. COLORADO-GRAND CANYON WATERSHED ASSESSMENTS, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
COLORADO-GRAND CANYON WATERSHED – STREAM ASSESSMENTS				
Beaver Dam Wash Utah border - Virgin River 10 miles AZ15010010-009	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 – Inconclusive	No current data. Added to the Planning List in 2002 due to insufficient sampling events.		
Boucher Creek California Wash - Colorado River 4 miles AZ15010002-017	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 – Inconclusive	No current data. Added to the Planning List in 2002 due to insufficient sampling events.		
Chuar Creek tributary at 36 11 36 / 111 52 17 - Lava Creek 3 miles AZ15010001-024B (Reach was split into warmwater and coldwater segments since the last assessment. No current data in 024A. Previous data were collected in 024B.)	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 – Inconclusive	No current data. Added to the Planning List in 2002 due to insufficient sampling events.		
Clear Creek tributary at 36 09 12 / 111 58 25 - Colorado River 8 miles AZ15010001-025B (Reach was split into warmwater and coldwater segments since the last assessment. No current data in 025A. Previous data were collected in 025B.)	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 – Inconclusive	No current data. Added to the Planning List in 2002 due to insufficient sampling events.		
Colorado River Lake Powell - Paria River 16 miles AZ14070006-001	A&Wc Attaining FC Attaining FBC Attaining DWS Inconclusive Agl Inconclusive Agl Attaining Category 2 – Attaining Some Uses	On the Planning List due to <u>missing core parameters</u> : total fluoride and total boron. Remove selenium from the Planning List. No exceedances of the chronic standard in 19 samples.		
Colorado River Parashant Canyon - Diamond Creek 28 miles AZ15010002-003	A&Wc Impaired FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive Category 5 – Impaired	On the Planning List due to: 1. Former turbidity standard exceedances (14 of 30 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring. 2. <u>Missing core parameters</u> : <i>Escherichia coli</i> , total boron, and total metals (mercury, arsenic, manganese, copper, and lead).	Add selenium to the 303(d) List due to chronic selenium exceedances (9 of 43 sampling events). Add suspended sediment concentration to the 303(d) List due to exceedances of the geometric mean standard in four of five years. Delete turbidity. The turbidity standard was repealed in 2002. Add to the Planning List due to exceedances of the former standard.	
Crystal Creek tributary at 36 13 42 / 112 11 48 - Colorado River 9 miles AZ15010002-018B (Reach was split into warmwater and coldwater segments since the last assessment. No current data in 018A. Previous data were collected in 018B.)	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 – Inconclusive	No current data. Added to the Planning List in 2002 due to insufficient sampling events.		

TABLE 8. COLORADO-GRAND CANYON WATERSHED ASSESSMENTS, PLANNING LIST, AND 303(d) STATUS TABLE

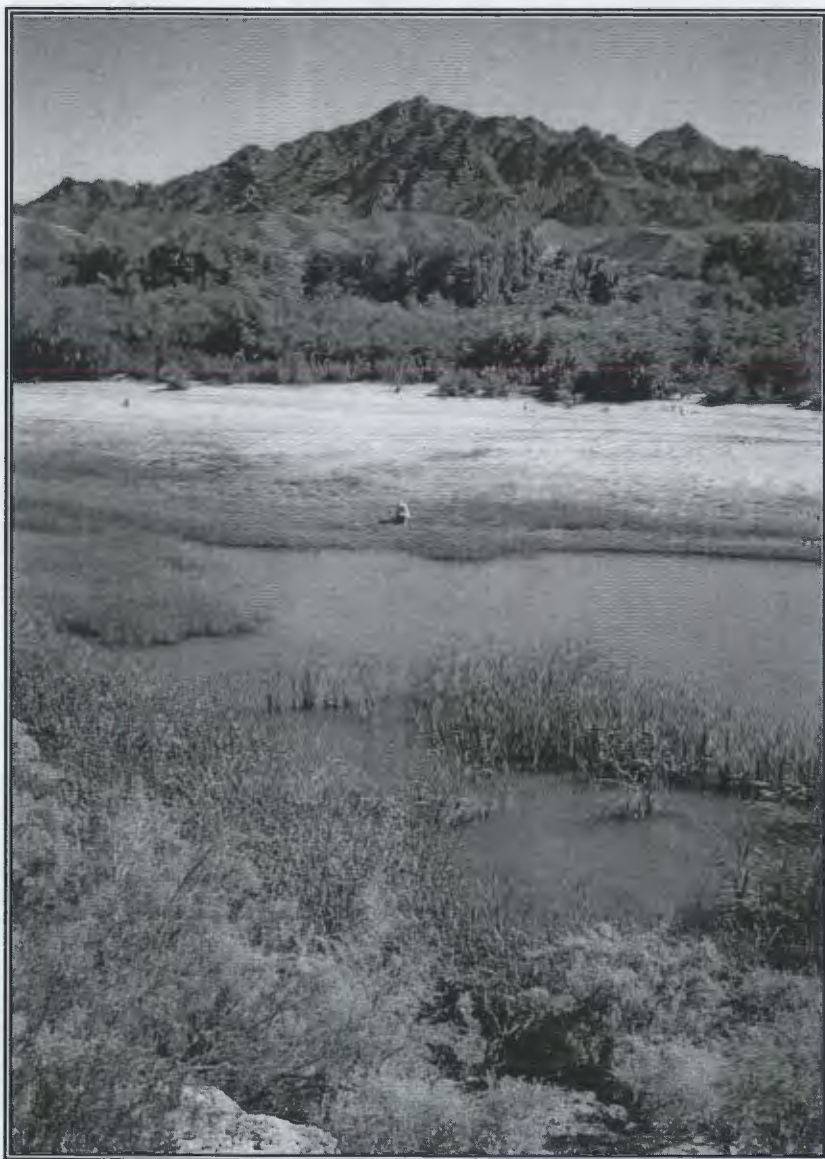
SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Deer Creek tributary at 36 26 16 /112 28 15.5 - Colorado River 5 miles AZ15010002-019B (Reach was split into warmwater and coldwater segments since the last assessment. No current data in 019A. Previous data were collected in 019B.)	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 - Inconclusive	No current data. Added to the Planning List in 2002 due to insufficient sampling events.		
Garden Creek headwaters - Pipe Creek 3 miles AZ15010002-841	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 - Inconclusive	No current data. Added to the Planning List in 2002 due to insufficient sampling events.		
Havasu Canyon Creek Havasupai Indian Reservation - Colorado River 3 miles AZ15010004-001 (previously listed as Havasu Creek)	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 - Inconclusive	On the Planning List. Added in 2002 due to: 1. Insufficient monitoring (no current data). 2. Former turbidity standard exceedances. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.		
Hermit Creek Hermit Pack Trail Crossing - Colorado River 4 miles AZ15010002-020B (Reach was split into warmwater and coldwater segments since the last assessment. No current data in 020A. Previous data were collected in 020B.)	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 - Inconclusive	No current data. Added to the Planning List in 2002 due to insufficient sampling events.		
Kwagunt Creek tributary at 36 13 29 /111 55 24 - Colorado River 7 miles AZ15010001-031B (Reach was split into warmwater and coldwater segments since the last assessment. No current data in 031A. Previous data were collected in 031B.)	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 - Inconclusive	No current data. Added to the Planning List in 2002 due to insufficient sampling events.		
Monument Creek headwaters - Colorado River 4 miles AZ15010002-845	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 - Inconclusive	No current data. Added to the Planning List in 2002 due to insufficient sampling events.		
Nankowasap Creek tributary at 36 15 30 /111 57 23 - Colorado River 7 miles AZ15010001-033B (Reach was split into warmwater and coldwater segments since the last assessment. No current data in 033A. Previous data were collected in 033B.)	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 - Inconclusive	No current data. Added to the Planning List in 2002 due to insufficient sampling events.		
National Canyon Creek headwaters - Colorado River 3 miles AZ15010002-016	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 - Inconclusive	No current data. Added to the Planning List in 2002 due to insufficient sampling events.		

TABLE 8. COLORADO-GRAND CANYON WATERSHED ASSESSMENTS, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Paria River Utah border - Colorado River 29 miles AZ14070007-123	A&Ww Impaired FC Inconclusive FBC Inconclusive Category 5 - Impaired	On the Planning List due to: 1. Former turbidity standard exceedances (32 of 43 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring. 2. <u>Missing core parameters</u> ; all except field parameters.	Add suspended sediment concentration to the 303(d) List due to exceedances of the geometric mean in all three years monitored. Laboratory data from NAU were not included. Lab QA/QC protocols were not fulfilled.	
Royal Arch Creek headwaters - Colorado River 5 miles AZ15010002-871	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 - Inconclusive	No current data. Added to the Planning List in 2002 due to insufficient sampling events.		
Saddle Canyon Creek tributary at 36 21 35.5 / 112 22 46 - Colorado River 5 miles AZ15010002-703B (Reach split into warmwater and coldwater segments since the last assessment. No current data in 703A.)	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 - Inconclusive	No current data. Added to the Planning List in 2002 due to insufficient sampling events.		
Shinumo Creek tributary at 36 21 18 21 / 112 18 03" - Colorado River 9 miles AZ15010002-029B (Reach split into warmwater and coldwater segments since the last assessment. No current data in 029A. Previous data were collected in 029B.)	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 - Inconclusive	No current data. Added to the Planning List in 2002 due to insufficient sampling events.		
Spring Canyon Creek headwaters - Colorado River 6 miles AZ15010002-318	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 - Inconclusive	No current data. Added to the Planning List in 2002 due to insufficient sampling events.		
Tapeats Creek headwaters - Colorado River 13 miles AZ15010002-696	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Category 3 - Inconclusive	No current data. Added to the Planning List in 2002 due to insufficient sampling events.		
Three Springs Creek headwaters - Colorado River 1 mile AZ15010002-1180	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 - Inconclusive	No current data. Added to the Planning List in 2002 due to insufficient sampling events.		
Vasey's Paradise (Spring) at Colorado River 0.2 miles AZ15010001-SP01	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Category 3 - Inconclusive	No current data. Added to the Planning List in 2002 due to insufficient sampling events.		

TABLE 8. COLORADO-GRAND CANYON WATERSHED ASSESSMENTS, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Virgin River Beaver Dam Wash - Big Bend Wash 10 miles AZL15010010-003	A&Ww Impaired FC Inconclusive FBC Attaining Agl Inconclusive Agl Inconclusive Category 5 - Impaired	On the Planning List due to: 1. <u>Missing core parameters</u> : total boron, dissolved metals (cadmium, copper, and zinc), and total metals (mercury, manganese, copper, and lead). 2. Former <u>turbidity</u> standard exceedances (12 of 24 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.	Add <u>selenium</u> to the 303(d) List due to chronic selenium exceedances (3 of 27 sampling events). Add <u>suspended sediment concentration</u> to the 303(d) List due to exceedances of the geometric mean in all three years with sufficient SSC monitoring data. <u>Delist fecal coliform</u> . Standards were repealed in 2002. <i>Escherichia coli</i> results are supporting designated uses. <u>Delist turbidity</u> . The turbidity standard was repealed in 2002. Add to the Planning List due to exceedances of the former standard.	
COLORADO-GRAND CANYON WATERSHED - LAKE ASSESSMENTS				
Dogtown Reservoir 70 acres AZL15010004-0480	A&Wc Inconclusive FC Attaining FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive Category 2 - Attaining Some Uses Trophic Status - Eutrophic	On the Planning List due to: 1. <u>Chronic selenium</u> exceedance (1 of 4 sampling events). 2. Low <u>dissolved oxygen</u> (1 of 5 samples). 3. <u>High pH</u> (2 of 5 samples). 4. <u>Missing core parameters</u> : <i>Escherichia coli</i> and dissolved metals (copper, cadmium, and zinc). 5. Former <u>turbidity</u> standard exceedances (3 of 4 samples). The causes and sources of turbidity will be investigated during the next monitoring cycle for this watershed.		
Lake Powell 9,772 acres AZL14070006-1130	A&Wc Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive Category 3 - Inconclusive Trophic status not calculated	On the Planning List due to: 1. <u><i>Escherichia coli</i></u> exceedance (1 exceedance in the last 3 years). 2. <u>Missing core parameters</u> (only <i>Escherichia coli</i> and turbidity data).		



The lower Gila River near Dome, Arizona.

The Colorado - Lower Gila Watershed

This watershed is defined by the Colorado River drainage area within Arizona from Hoover Dam (at Lake Mead) to the Mexico border near Yuma, excluding the Bill Williams River and the Gila River above Painted Rocks Dam.

Land ownership is divided approximately as: 1% private land, 6% state land, 89% federal land, and 4% Tribal lands. Except for communities along the Colorado River (Yuma, Bullhead City, Lake Havasu City), most of this 14,459 square mile watershed is sparsely populated with only 187,700 people (2000 census). Due in part to the sparse population, six wildlife refuges and three wilderness areas have been established in this watershed, along with several military bases with live-fire exercise areas. All of these have restricted land uses. Tribal and private land along the lower Colorado River and lower Gila River is intensively cultivated. Open grazing occurs across the watershed.

Elevations range from 5,450 feet (above sea level) in the mountains near Lake Mohave to 80 feet along the Colorado River as it enters Mexico; therefore, the area contains low desert fauna and flora, including warmwater aquatic communities where perennial waters exist. Perennial water is limited to the Colorado River mainstem, with irrigation return flow providing perennial flow in the Gila River near Yuma.

The assessment – Assessments were completed for only six stream reaches and five lakes in this watershed. Of the 143 stream miles assessed, zero miles were attaining all uses and 69 miles (two reaches) were impaired. Of the 29,557 lake acres assessed, none were assessed as attaining all uses and 185 acres (one lake) were assessed as impaired. All others were inconclusive or attaining some uses.

A watershed assessment map follows on the next page, illustrating stream and lake assessments by category. The Colorado-Lower Gila **monitoring table** (**Table 9**) following the map summarizes the water quality data used in the assessment. It is followed by the **assessment table** (**Table 10**), which bridges current assessments with past assessments and impaired water identification. Important to note in this table are comments regarding previous 303(d) lists (what has been added and removed), category designations (1 through 5), references to potential actions by EPA, and status of TMDLs.

More detailed information on how to use these tables can be found at the beginning of this chapter (p. IV-1). Information about assessment methods and criteria can be found in Chapter III.

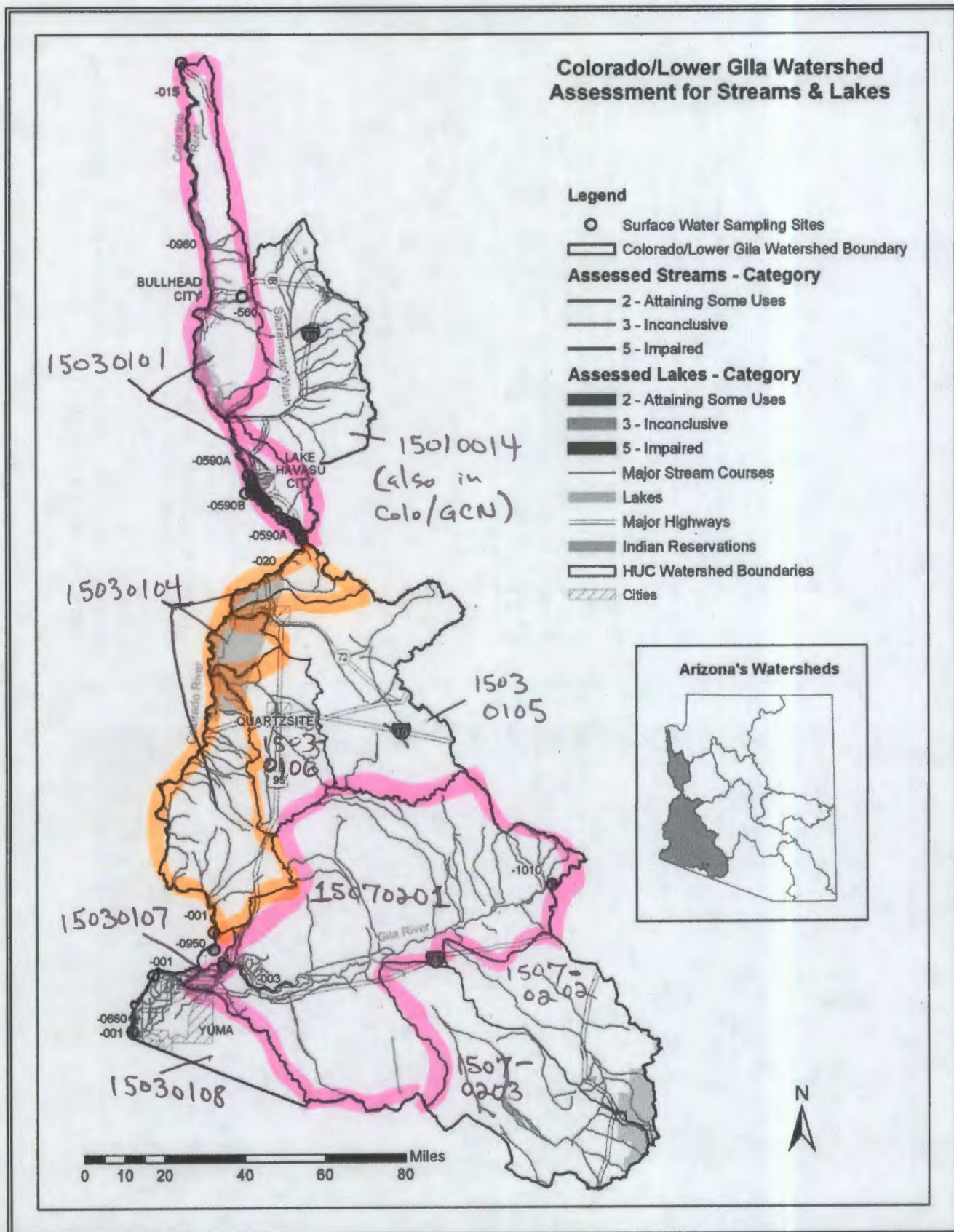


Figure 17. Watershed monitoring and assessments

TABLE 9. COLORADO - LOWER GILA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE								
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS			
STREAM MONITORING DATA											
Colorado River Hoover Dam - Lake Mohave AZ15030101-015 A&Wc, FC, FBC, DWS, Agl, AgL	USGS Station 09421500 Below Hoover Dam CMCLR243.26	1998 - 5 partial suites 1999 - 6 partial suites 2000 - 6 partial suites 2001 - 5 partial suites 2002 - 3 partial suites	Dissolved oxygen mg/L	>7.0 (90% saturation) (A&Wc)	6.6 - 9.0 (66 - 91%)	2 of 26		Dissolved selenium data compared to total selenium standards.			
			Selenium (dissolved) µg/L	2.0 (A&Wc chronic - total)	<2.0 - 3.0	4 of 26					
			Summary Row						1998-2002 25 sampling events	Dissolved oxygen mg/L	>7.0 (90% saturation) (A&Wc)
	A&Wc Impaired FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive AgL Inconclusive			Selenium (dissolved) µg/L	2.0 (A&Wc chronic - total)	<2.0 - 3.0	4 of 26 samples 4 of 26 events	Impaired	Also placed on the Planning List due to missing core parameters: <i>Escherichia coli</i> , total arsenic, total boron, total fluoride, and total metals (chromium, copper, lead, manganese, and mercury).		
Colorado River Bill Williams R. - Osborne Wash AZ15030104-020 A&Ww, FC, FBC, DWS, Agl, AgL	USGS Fixed Station Station #09427520 Below Parker Dam CMCLR127.02	1998 - 6 full suites 1999 - 5 full suites 2000 - 5 full suites 2001 - 4 full suites 2002 - 4 full suites	Selenium (total) µg/L	2.0 (A&Wc chronic)	1.0 - 4.8	1 of 20		Lab reporting limits for 4 other selenium samples were too high to use results for assessment.			
	Summary Row		1998 - 2002 24 sampling events	Selenium (total) µg/L	2.0 (A&Wc chronic)	1.0 - 4.8	1 of 20 events	Inconclusive	USGS collected 24 samples in 1998-2002. Assessed as "attaining some uses" and placed on the Planning List due to selenium exceedance.		
A&Ww Inconclusive FC Attaining FBC Attaining DWS Attaining Agl Attaining AgL Attaining											
Colorado River Indian Wash - Imperial Dam AZ15030104-001 A&Ww, FC, FBC, DWS, Agl, AgL	USGS Fixed Station Station #09429490 Above Imperial Dam CMCLR029.79 100752	1998 - 5 partial suites 1999 - 5 partial suites 2000 - 6 partial suites 2001 - 2 partial suites 2002 - 4 full suites	Suspended sediment concentration mg/L	80 (geo mean) (A&Ww)	8 - 559	Geo means: 1998 = 96 1999 = 27 2000 = 20		Maximum base flow was calculated to be 19,100 cfs based on 30 years of flow data. Insufficient data to calculate a geomean for SSC in 2001 and 2002.			
	Summary Row		1998 - 2002 22 sampling events	Suspended sediment concentration mg/L	80 (geo mean) (A&Ww)	8 - 559	1 of 3 annual geo. means	Inconclusive	US Geological Survey collected 22 samples in 1998-2002. Assessed as "attaining some uses" due to SSC exceedance.		
A&Ww Inconclusive FC Attaining FBC Attaining DWS Attaining Agl Attaining AgL Attaining											

TABLE 9. COLORADO - LOWER GILA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
Colorado River Main Canal - Mexico border AZ15030107-001 A&Ww, FC, FBC, DWS, Agl, AgL	USGS Fixed Station Station #09522000 At Mexico boundary Upstream of Morelos Dam CMCLR015.85 100744	1998 - 5 full suites 1999 - 3 full + 2 partial suites 2000 - 5 full + 2 partial suites 2001 - 4 full + 2 partial suites 2002 - 4 full + 2 partial suites	DDE µg/L	0.001 (FC, Agl, AgL)	<0.006 - 0.476	1 of 23		
				0.02 (A&Ww chronic)		1 of 23		
				0.1 (DWS)		1 of 23		
			Dieldrin µg/L	0.002 (A&Ww chronic & DWS)	<0.001 - 0.630	1 of 23		
				0.0001 (FC)		1 of 23		
				0.09 (FBC)		1 of 23		
			Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	5.0 - 11.0 (83 - 105%)	4 of 29		
			Hexachlorocyclo- hexane alpha (BHC) µg/L	0.006 (DWS)	<0.002 - 0.617	1 of 23		
				0.01 (FC)		1 of 23		
				0.22 (FBC)		1 of 23		
			Selenium (total) µg/L	2.0 (A&Ww chronic)	1.0 - 3.0	1 of 21		
			Suspended sediment concentration mg/L	80 (geo mean) (A&Ww)	5.0 - 398	Geo means: 1998 = 128 1999 = 53 2000 = 18 2001 = 14 2002 = 12		Maximum base flow was calculated to be 6460 cfs based on 30 years of flow data.
	Summary Row A&Ww Inconclusive FC Attaining FBC Attaining DWS Attaining Agl Attaining Agl Attaining	1998 - 2002 29 sampling events	DDE µg/L	0.001 (FC, Agl, AgL)	<0.006 - 0.476	1 of 23	Attaining	USGS collected 29 samples in 1998-2002. Assessed as "attaining some uses" and placed on the Planning List due to DDE, dieldrin, SSC, and selenium exceedances.
				0.02 (A&Ww chronic)	<0.006 - 0.476	1 of 23 events	Inconclusive	
				0.1 (DWS)	<0.006 - 0.476	1 of 23	Attaining	
			Dieldrin µg/L	0.002 (A&Ww chronic)	<0.001 - 0.630	1 of 23 events	Inconclusive	
				0.002 (DWS)	<0.001 - 0.630	1 of 23 events	Attaining	

TABLE 9. COLORADO - LOWER GILA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
				0.0001 (FC)	<0.001 - 0.630	1 of 23	Attaining	
				0.09 (FBC)	<0.001 - 0.630	1 of 23	Attaining	
			Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	5.0 - 11.0 (63 - 105%)	4 of 29	Attaining	
			BHC µg/L	0.006 (DWS)	<0.002 - 0.617	1 of 23	Attaining	
				0.01 (FC)	<0.002 - 0.617	1 of 23	Attaining	
				0.22 (FBC)	<0.002 - 0.617	1 of 23	Attaining	
			Selenium (total) µg/L	2.0 (A&Ww chronic)	1.0 - 3.0	1 of 21 events	Inconclusive	
			Suspended sediment concentration mg/L	80 (geo mean) (A&Ww)	5.0 - 398	1 of 5 annual geo. means	Inconclusive	
Colorado River, <u>unnamed</u> tributary near Thumb Butte headwaters - Colorado River AZ15030101-560 A&We, PBC	USGS Near Thumb Butte CMUW1009.90 101598	2001 - 1 partial suite	No exceedances					
	Summary Row A&We Inconclusive PBC Inconclusive	2001 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Gila River Coyote Wash - Fortuna Wash AZ15070201-003 A&Ww, FC, FBC, AgI, AgL	ADEQ and USGS Fixed Station Near Dome, USGS #09520500 LGGLR005.76 100455	1998 - 4 full suites 1999 - 5 full suites 2000 - 4 full suites 2001 - 4 full suites 2002 - 3 full suites	Boron (total) µg/L	1000 (AgI)	100 - 1500	5 of 20		
			Dissolved oxygen mg/L	6.0 (90% saturation) (A&Ww)	3.2 - 11.8 (40 - 114%)	3 of 18		Two of the dissolved oxygen exceedances occurred during low flow conditions.
			Selenium (total) µg/L	2.0 (A&Ww chronic)	<5 - 9.2	5 of 20		
	Summary Row A&Ww Impaired FC Attaining FBC Attaining AgI Impaired AgL Attaining	1998-2002 20 sampling events	Boron (total) µg/L	1000 (AgI)	100 - 1500	5 of 20	Impaired	ADEQ collected 20 samples in 1998-2002. Assessed as "Impaired" due to boron and selenium exceedances.
			Dissolved oxygen mg/L	6.0 (90% saturation) (A&Ww)	3.2 - 11.8 (40 - 114%)	3 of 18	Attaining	
			Selenium (total) µg/L	2.0 (A&Ww chronic)	<5 - 9.2	5 of 20 events	Impaired	

TABLE 9. COLORADO - LOWER GILA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE						
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS	
LAKES MONITORING DATA									
Hunter's Hole (Colorado River backwater) AZL15030108-0660 A&Ww, FC, FBC, AgL	AGFD Ambient Monitoring CMHUN	2000 - 1 partial suite	Selenium (total) µg/L	20 (A&Ww acute)	<5 - 22	1 of 1		Lab reporting limits for 4 other selenium samples were too high to use results for assessment.	
				2.0 (A&Ww chronic)	<5 - 22	1 of 1			
	Summary Row	2000	Selenium (total) µg/L	20 (A&Ww acute)	<5 - 22	1 of 1 event (in 2000)	Inconclusive	Insufficient monitoring data to assess. Placed on the Planning List due to selenium exceedance.	
	A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	1 sampling event		2 (A&Ww chronic)	<5 - 22	1 of 1 event	Inconclusive		
Lake Havasu AZL15030101-0590 A&Ww, FC, FBC, DWS, AgL, AgL	ADEQ Lakes Program Dam Site, Parker Dam CMHAV-A 100098	1998 - 1 partial suite 2000 - 1 partial suite 2001 - 3 full suites 2002 - 1 partial suite	Selenium (total) µg/L	2.0 (A&Ww chronic)	<0.002 - 4	1 of 7			
	ADEQ Lakes Program CMHAV-B 100102	1998 - 1 full suite 2000 - 2 full suites 2001 - 4 full suites 2002 - 1 full suite	Mercury (dissolved) µg/L	0.01 (A&Ww chronic)	<0.5 - 0.8	1 of 1			
			Mercury (total) µg/L	0.6 (FC)	<0.5 - 0.8	1 of 8			
			Selenium (total) µg/L	2.0 (A&Ww chronic)	<2 - 3	1 of 5			
	ADEQ Lakes Program CMHAV-C 100099	1998 - 1 full suite 2001 - 4 full suites 2002 - 1 full suite	Mercury (dissolved) µg/L	0.01 (A&Ww chronic)	<0.5 - 0.7	1 of 1			Laboratory reporting limit for 3 other selenium samples was too high to use results for assessment.
			Mercury (total) µg/L	0.6 (FC)	<0.5 - 0.7	1 of 6			
			Selenium (dissolved) µg/L	2.0 (A&Ww chronic - total)	<2 - 3	1 of 4			
	ADEQ Lakes Program Colorado River CMHAV-CRA 100101	1998 - 1 full suite 2000 - 2 full suites 2001 - 2 full suites 2002 - 1 full suite	No exceedances						
	ADEQ Lakes Program Marina CMHAV-MARA 100167	2000 - 1 full suite 2001 - 1 full suite	No exceedances						

TABLE 9. COLORADO - LOWER GILA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
	Mohave County Health Dept 13 sites: Body Beach Cattail Cove Crazy Horse Beach London Bridge, East Beach London Bridge, West Beach Nautical Inn Beach Rotary Beach, North Rotary Beach, South Sandpoint Marina South Channel Up River Windsor #4 Windsor Cove	2000 - 27 <i>E. coli</i> 2001 - 18 <i>E. coli</i> 2002 - 15 <i>E. coli</i>	Escherichia coli CFU	235 (FBC)	<1 - 2419	1 of 60 sampling events (occurred at Nautical Inn Beach in 2000)		Nautical Inn Beach is located in Thompson Bay.
	Mohave County Health Dept 13 sites: Bass Bay Bighorn Point Friendly Island Frog Point Partners Point Pilot Rock Rocky landing Satellite Cove Solitude Cove Standard Wash Cove Steamboat Cove Three Dunes Cove Wren Cove	2000 - 6 <i>E. coli</i> 2001 - 2 <i>E. coli</i> 2002 - 4 <i>E. coli</i>	Escherichia coli CFU	235 (FBC)	<1 - 501	2 of 12 sampling events 1 at Bass Bay (368 CFU) in 2000 1 at Standard Wash Cove (501 CFU) in 2002		Bass Bay is approximately 10 miles south of Thompson Bay. Standard Wash Cove is approximately 6 miles south of Thompson Bay.
	Mohave County Health Dept North Channel	2001 - 18 <i>E. coli</i> 2002 - 15 <i>E. coli</i>						
	Summary Row	1998 - 2002 1077 samples	Escherichia coli CFU/100ml	235 FBC	<1 - 2419	3 sites with 1 exceedance: 1 of 60 events 1 of 12 events 1 of 12 events	Inconclusive	ADEQ collected 108 samples at 33 sites in 1998-2002. Field and <i>Escherichia coli</i> samples only were collected at 28 of the 33 sites. These 28 sites are not shown in this table. No exceedances were found.
	A&Ww Inconclusive FC Attaining FBC Inconclusive DWS Attaining Agl Attaining Agl Attaining		Mercury (dissolved) µg/L	0.01 (A&Ww chronic)	<0.5 - 0.8	2 of 12 samples 1 of 4 events	Inconclusive	Mohave County also collected 969 <i>Escherichia coli</i> samples at 27 sites.
			Mercury (total) µg/L	0.6 (FC)	<0.5 - 0.8	2 of 27	Attaining	Assessed as "attaining some uses" and placed on the Planning List due to mercury, selenium, and <i>Escherichia coli</i> exceedances.
			Selenium (total) µg/L	2 (A&Ww chronic)	<2 - 3	3 of 24 samples 1 of 7 events	Inconclusive	<i>Escherichia coli</i> exceedances were not combined because single exceedances occurred at widely separated beaches (at least 5 miles apart).

TABLE 9. COLORADO - LOWER GILA WATERSHED - 2004 ASSESSMENT MONITORING DATA

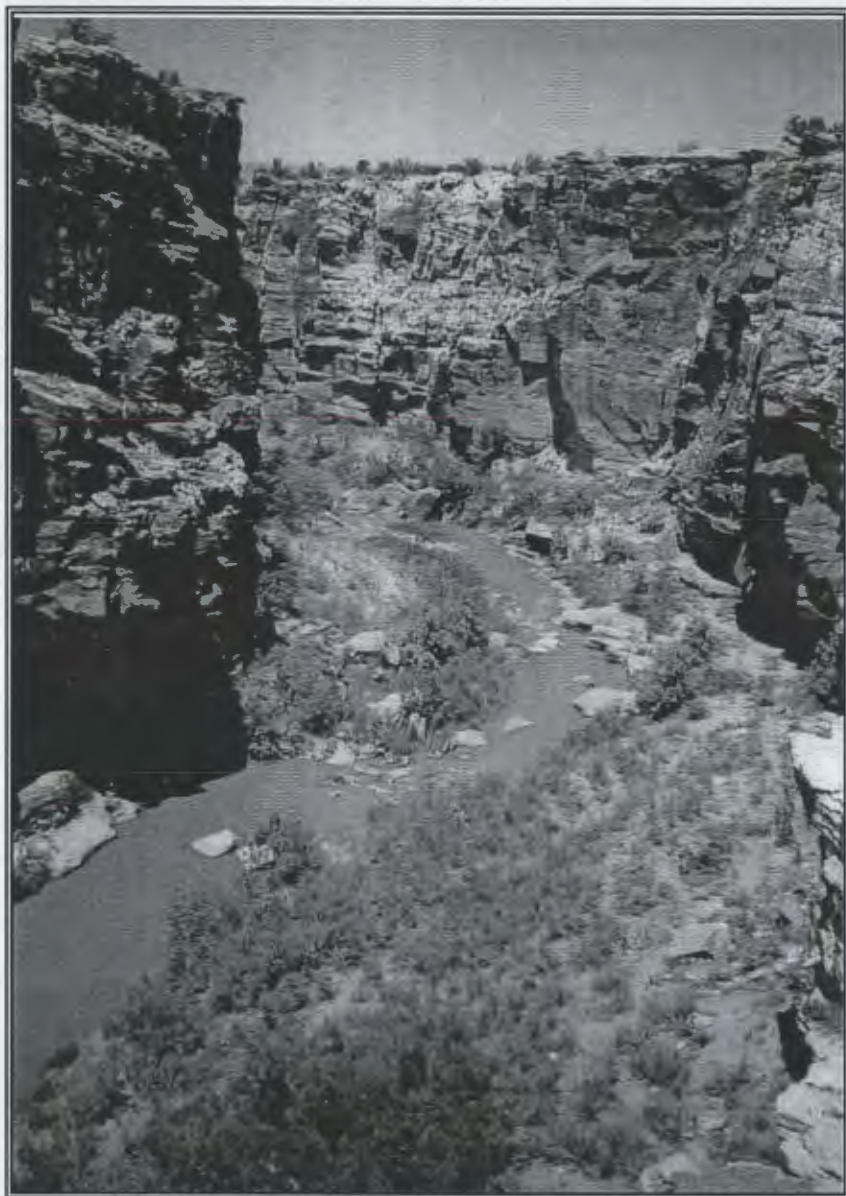
STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
Mittry Lake AZ15030107-0950 A&w, FC, FBC	ADEQ Lakes Program CMMIT-A 101352	2002 - 1 partial suite	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive	2002 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Painted Rock Borrow Pit Lake AZL15070201-1010 A&Ww, FC, FBC, Agl, AgL	USFWS Routine Monitoring LGPRL	1999 - 5 partial suites 2000 - 1 full + 2 partial suites 2001 - 1 full suite 2002 - 0 (Dry)	Ammonia mg/L	varies with pH and temperature (A&Ww chronic)	0.4 - 0.68	1 of 7		
			Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	1.8 - 13.8	5 of 8		
			pH (high) SU	6.5-9.0 (A&Ww, FBC, Agl, AgL)	7.1 - 9.8	1 of 8		
	Summary Row A&Ww Impaired FC Impaired FBC Inconclusive Agl Inconclusive AgL Inconclusive	1999 - 2002 9 sampling events	Ammonia mg/L	varies with pH and temperature (A&Ww chronic)	0.4 - 0.68	1 of 7 samples 1 of 7 events	Inconclusive	USFWS collected 9 samples in 1999-2002. Assessed as "impaired" due to pesticides in fish tissue and low dissolved oxygen. *EPA placed this lake on the 2002 303(d) List because DDT metabolites, toxaphene, and chlordane in fish tissue lead to a fish consumption advisory. Once listed, the lake cannot be delisted until a TMDL is complete or sufficient data are collected to indicate these parameters are no longer a concern in fish tissue (fish consumption advisory is removed).
			Dissolved oxygen mg/L	6.0 (90% saturation) (A&Ww)	1.8 - 13.8	5 of 8	Inconclusive (impaired)	On the 303(d) List since 1992 for low dissolved oxygen. Although current dissolved oxygen data are inconclusive, the lake cannot be delisted until a TMDL is complete or dissolved oxygen data indicate designated uses are being attained.
			pH (high) SU	6.5-9.0 (A&Ww, FBC, Agl, AgL)	7.1 - 9.8	1 of 8	Inconclusive	Placed on the Planning List due to exceedances of ammonia and pH standards and missing core parameters: total boron, <i>Escherichia coli</i> , dissolved metals (cadmium, copper, and zinc), and total metals (mercury, manganese, copper, and lead). Note that the lake was dry in 2002.

Table 10. COLORADO-LOWER GILA WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
COLORADO-LOWER GILA WATERSHED – STREAM ASSESSMENTS				
Colorado River Hoover Dam - Lake Mohave 40 miles AZ15030101-015	A&Wc Impaired FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive AgL Inconclusive Category 5 – Impaired	On the Planning List due to <u>missing core parameters</u> : <i>Escherichia coli</i> , total arsenic, total boron, total fluoride, and total metals (chromium, copper, lead, manganese, and mercury).	Add selenium to the 303(d) List due to chronic selenium exceedances (4 of 26 sampling events).	
Colorado River Bill Williams River - Osborne Wash 13 miles AZ15030104-020	A&Ww Inconclusive FC Attaining FBC Attaining DWS Attaining Agl Attaining AgL Attaining Category 2 – Attaining Some Uses	On the Planning List due to <u>chronic selenium</u> exceedance (1 of 20 sampling events).		
Colorado River Indian Wash - Imperial Dam 18 miles AZ15030104-001	A&Ww Inconclusive FC Attaining FBC Attaining DWS Attaining Agl Attaining AgL Attaining Category 2 – Attaining Some Uses	On the Planning List due to <u>suspended sediment concentration</u> (SSC) geometric mean exceedance (1 of 3 annual geo. means).		
Colorado River Main Canal - Mexico border 32 miles AZ15030107-001	A&Ww Inconclusive FC Attaining FBC Attaining DWS Attaining Agl Attaining AgL Attaining Category 2 – Attaining Some Uses	On the Planning List due to: 1. <u>Chronic DDE</u> exceedance (1 of 23 sampling events). 2. <u>Chronic dieldrin</u> exceedance (1 of 23 sampling events). 3. <u>Chronic selenium</u> exceedance (1 of 21 sampling events). 4. <u>Suspended sediment concentration</u> (SSC) geometric mean exceedance (1 of 5 annual geo. means).		
Colorado River, <u>unnamed tributary</u> near Thumb Butte headwaters - Colorado River 11 miles AZ15030101-560	A&We Inconclusive PBC Inconclusive Category 3 – Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Gila River Coyote Wash - Fortuna Wash 28 miles AZ15070201-003	A&Ww Impaired FC Attaining FBC Attaining Agl Impaired AgL Attaining Category 5 – Impaired		Add boron to the 303(d) List due to boron exceedances in 5 of 20 samples. Add selenium to the 303(d) List due to chronic selenium exceedances in 5 of 20 sampling events.	

Table 10. COLORADO-LOWER GILA WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
COLORADO-LOWER GILA WATERSHED — LAKE ASSESSMENTS				
Hunter's Hole 17 acres AZL15030108-0660	A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive Category 3 — Inconclusive Trophic status not calculated	On the Planning List due to: 1. Insufficient monitoring data to assess (only 1 sample). 2. <u>Acute and chronic selenium</u> exceedance (1 of 1 sampling event).		
Lake Havasu 16,122 acres AZL15030101-0590	A&Ww Inconclusive FC Attaining FBC Inconclusive DWS Attaining AgL Attaining AgL Attaining Category 2 — Attaining Some Uses Trophic status — Oligotrophic	On the Planning List due to: 1. <u>Chronic mercury</u> exceedance (1 of 4 sampling events). 2. <u>Chronic selenium</u> exceedance (1 of 7 sampling events). 3. <u>Escherichia coli</u> exceedances (1 exceedance at 3 sites). (Note that the <u>Escherichia coli</u> exceedances are being assessed separately because the monitoring sites with exceedances were approximately 5 miles apart on the lake. Only 1 exceedance in the last 3 years at any site.)		
Lake Mohave 12,850 acres AZL15030101-0960	A&Wc Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive AgL Inconclusive AgL Inconclusive Category 3 — Inconclusive Trophic status — Oligotrophic	On the Planning List. Added in 2002 due to missing core parameters (no current monitoring data).		
Mittry Lake 384 acres AZL15030107-0950	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 — Inconclusive Trophic status not calculated	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Painted Rock Borrow Pit Lake 186 acres AZL15070201-1010	A&Ww Impaired FC Impaired FBC Inconclusive AgL Inconclusive AgL Inconclusive Category 5 — Impaired Trophic status not calculated	On the Planning List due to: 1. <u>Chronic ammonia</u> exceedance (1 of 7 sampling events). 2. <u>pH</u> exceedance (1 of 8 samples). 3. <u>Missing core parameters</u> : total boron, <u>Escherichia coli</u> , total metals (mercury, manganese, lead, and copper), and dissolved metals (copper, cadmium, and zinc).	EPA placed this reach on the 2002 303(d) List because DDT metabolites, toxaphene, and chlordane in fish tissue led to a fish consumption advisory. EPA's listing was based on violation of narrative water quality standards. Arizona's Impaired Water Identification Rule requires adoption of narrative implementation policy before the state may use narrative information in a listing decision, but once listed, the lake cannot be delisted until a TMDL is complete or sufficient data are collected to indicate that these pesticides are no longer a concern in fish tissue (e.g., fish consumption advisory removed). ADEQ is currently collecting fish tissue data in support of completing a TMDL. On the 303(d) List since 1992 for low dissolved oxygen. Although current dissolved oxygen data are inconclusive, the reach cannot be delisted until a TMDL is complete or dissolved oxygen data indicate that designated uses are being attained. <u>Delist fecal coliform</u> . Standard was repealed in 2002. Placed on the Planning List for <u>Escherichia coli</u> monitoring (replaced fecal coliform standard).	These pesticides do not stay in an aqueous state and bioaccumulate rapidly up the food chain. Additionally, most lab reporting limits are not low enough to assess standards; therefore, lack of exceedances in the water column does not provide sufficient information about pesticide problems in the stream.



Silver Creek, a tributary of the Little Colorado River, near Snowflake, Arizona.

The Little Colorado - San Juan Watershed

This watershed is defined by the Little Colorado River drainage area from its headwaters to the Colorado River. The flow on the Little Colorado River is "interrupted" (stretches of perennial, intermittent, and ephemeral flow). Perennial flow is generally limited to headwater streams.

Land ownership is divided approximately as: 15% private land, 10% state land, 15% federal land, and 60% Tribal lands. This 26,794 square mile watershed is sparsely populated outside of Flagstaff, with 236,500 people (including Flagstaff). Land use is primarily open grazing, forestry, recreation, and mining. Land and resource use is restricted on four national monuments, four designated wilderness areas, and two national forests.

Elevations range from 12,600 feet (above sea level) at Humphrey's Peak to 2,700 feet near the Colorado River; however, almost the entire watershed is above 5000 feet elevation (desert highlands flora and fauna), with coldwater aquatic communities where perennial waters exist.

The area includes horizontally stratified sedimentary rocks (e.g., sandstone and limestone) which have eroded to form canyon and plateaus. In a few areas, igneous rocks have deposited on sedimentary formations due to volcanic activity. Natural erosion can be easily increased by human activities in such locations.

The assessment – Assessments were completed for 35 stream reaches and 22 lakes in this watershed. Of the 473 stream miles assessed, zero miles were attaining all uses and 93 miles (nine reaches) were impaired or not attaining a use. Of the 4,866 lake acres assessed, none were assessed as attaining all uses and 3,560 acres (eight lakes) were assessed as impaired or not attaining a use. All other reaches and lakes assessed were inconclusive or attaining some uses.

A watershed assessment map follows on the next page, illustrating stream and lake assessments by category. The Little Colorado **monitoring table (Table 11)** following the map summarizes the water quality data used in the assessment. It is followed by the **assessment table (Table 12)**, which bridges current assessments with past assessments and impaired water identification. Important to note in this table are comments regarding previous 303(d) lists (what has been added and removed), category designations (1 through 5), references to potential actions by EPA, and status of TMDLs.

Detailed information on how to use these tables is found at the beginning of this chapter (p. IV-1). Assessment methods and criteria can be found in Chapter III.

Little Colorado River Watershed Assessment for Streams & Lakes

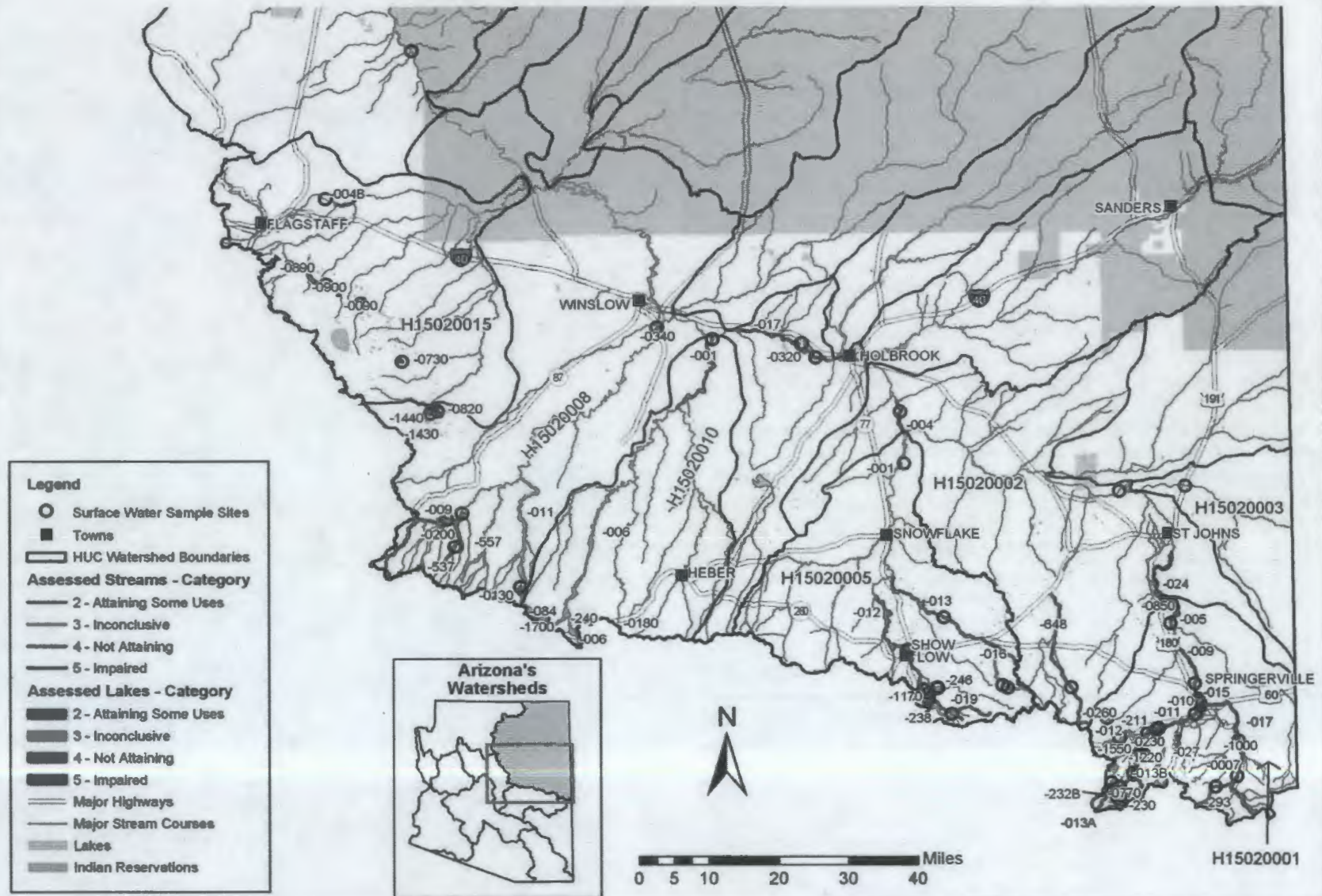


Figure 18. Watershed monitoring and assessments

TABLE 11. LITTLE COLORADO - SAN JUAN WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
STREAM MONITORING DATA								
Barbershop Canyon Creek headwaters - East Clear Creek AZ15020008-537 A&Wc, FC, FBC, AgL	ADEQ Ambient Monitoring At Merrit Draw LCBRB003.84 100410	2000 - 1 full suite 2001 - 3 full suites	Dissolved oxygen mg/L	>7.0 (90% saturation) (A&Ww)	6.5 - 10.00 (88 - 97%)	1 of 4		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment. Lab reporting limits for copper were too high to use results for assessment.
	Summary Row A&Wc Inconclusive FC Attaining FBC Attaining AgL Attaining	2000-2001 4 samples	No exceedances					ADEQ collected 4 samples in 2000-2001. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameter: dissolved copper.
Billy Creek headwaters - Show Low Creek AZ15020005-019 A&Wc, FC, FBC, AgL	ADEQ Ambient Monitoring At Pinetop LCBIL003.86 100946	2000 - 1 full suite 2001 - 3 full suites	Escherichia coli CFU/100 ml	235 (FBC)	<2 - 420	1 of 4		Lab reporting limits for copper were too high to use results for assessment.
		Turbidity (former standard) NTU	10 (A&Wc)	5 - 16	1 of 4			
	ADEQ Ambient Monitoring Above Porter Creek LCBII000.03 100947	2000 - 1 full suite 2001 - 3 full suites	Turbidity (former standard) NTU	10 (A&Wc)	4 - 28	2 of 4		
	Summary Row A&Wc inconclusive FC Attaining FBC Inconclusive AgL Attaining	2000-2001 8 samples 4 sampling events	Escherichia coli CFU/100ml	235 (FBC)	<2 - 420	1 of 4 events (in 2000)	Inconclusive	ADEQ collected 8 samples at 2 sites in 2000-2001. Assessed as "attaining some uses" and placed on the Planning List due to: 1. Escherichia coli exceedance, 2. Missing core parameter: dissolved copper, and 3. Former turbidity standard exceedances. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.
		Turbidity (former standard) NTU	10 (A&Wc)	4 - 28	3 of 8	Inconclusive		
Brown Creek headwaters - Silver Creek AZ15020005-016 A&Wc, FC, FBC (tributary rule)	ADEQ Ambient Monitoring Outside of exclosures LCRBRO009.99 101241	2001 -1 full suite	No exceedances					Lab reporting limits for copper were too high to use results for assessment.
	ADEQ Ambient Monitoring Below Brown Spring- within cattle exclosure LCBRO0010.4 101242	2001 - 1 full suite	No exceedances					

TABLE 11. LITTLE COLORADO - SAN JUAN WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row	2001	No exceedances					Insufficient monitoring data to assess.
	A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	2 samples 1 sampling event						
Chevelon Creek Black Canyon - Little Colorado River AZ15020010-001 A&Wc, FC, FBC, AgL, AgI	ADEQ Ambient Monitoring Below diversion dam near Winelow LCCHC000.69 100341	2001 - 1 full suite 2002 - 3 full suites	Turbidity (former standard) NTU	10 (A&Wc)	12 - 34	4 of 4		
	Summary Row	2001 - 2002	Turbidity (former standard) NTU	10 (A&Wc)	12 - 34	4 of 4	Inconclusive	ADEQ collected 4 samples in 2001-2002. Assessed as "attaining some uses" and placed on the Planning List due to exceedances of the former turbidity standard. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.
	A&Wc Inconclusive FC Attaining FBC Attaining AgI Attaining AgL Attaining	4 sampling events						
Colter Creek headwaters - Nutrioso Creek AZ15020001-293 A&Wc, FC, FBC, AgL	ADEQ Ambient Monitoring Near Nutrioso LCCHC001.94 100935	2001 - 1 full suite 2002 - 3 full suites	No exceedances					Lab reporting limits for copper were too high to use results for assessment.
	Summary Row	2001 - 2002	No exceedances					ADEQ collected 4 samples in 2001-2002. Assessed as "attaining some uses" and placed on the Planning list due to missing core parameter: dissolved copper.
	A&Wc Inconclusive FC Attaining FBC Attaining AgI Attaining AgL Attaining	4 sampling events						
East Clear Creek headwaters - Yeager Canyon AZ15020008-009 A&Wc, FC, FBC, AgL, AgI	ADEQ Ambient Monitoring Above Yeager Canyon LCECL007.86 100537	2000 - 1 full suite 2001 - 3 full suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	5.4 - 10.5 (72 - 91%)	2 of 4		Lab reporting limits for copper were too high to use results for assessment.
	Summary Row	2000 - 2001	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	5.4 - 10.5 (72 - 91%)	2 of 4	Inconclusive	ADEQ collected 4 samples in 2000-2001. Assessed as "attaining some uses" and placed on the Planning List due to low dissolved oxygen and missing core parameter: dissolved copper.
	A&Wc Inconclusive FC Attaining FBC Attaining AgI Attaining AgL Attaining	4 samples 4 sample events						
Fish Creek headwaters - Little Colorado River AZ15020001-211 A&Wc, FC, FBC, AgL	ADEQ Ambient Monitoring upstream FS Road #118 LCFIS001.97 101244	2001 - 1 full suite	Mercury (dissolved) µg/L	0.01 (A&Wc chronic)	0.8	1 of 1		Lab reporting limits for copper samples were too high to use results for assessment.
				0.6 (FC)		1 of 1		Dissolved mercury data compared to total mercury standard.
	Summary Row	2001	Mercury (dissolved) µg/L	0.01 (A&Wc chronic)	0.8	1 of 1 event	Inconclusive	Insufficient monitoring data to assess (only 1 sample).
	A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	1 sampling event		0.6 (FC)		1 of 1	Inconclusive	Placed on the Planning List due to mercury exceedance.
Hall Creek headwaters - Little Colorado River AZ15020001-012 A&Wc, FC, FBC, AgL, AgI	ADEQ Ambient Monitoring Below wilderness area and above Highway 273 LCHAL007.00 101263	2001 - 1 full suite	Dissolved oxygen mg/L	>7.0 (A&Wc)	6.5	1 of 1		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.

TABLE 11. LITTLE COLORADO - SAN JUAN WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive AgL Inconclusive	2000-2001 1 sampling event	No exceedances					Insufficient monitoring data to assess (only 1 sample).
Lee Valley Creek Lee Valley Reservoir - East Fork of Little Colorado River AZ15020001-232B A&Wc, FBC, FC, AgL	ADEQ Ambient Monitoring Above wilderness boundary LCLVL00.85 101243	2001 - 1 full suite	No exceedances					
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	2001 1 sampling event	No exceedances					Insufficient monitoring data to assess (only 1 sample).
Little Colorado River West Fork Little Colorado - Water Canyon Creek AZ15020001-011 A&Wc, FC, FBC, Agl, AgL	Town of Eager "Big Ditch" Project Site 1 - At South Fork of LCR LCLCR174.81	2001 - 3 field 2002 - 12 field	Turbidity (former standard) NTU	10 (A&Wc)	3 - 18	2 of 15		Lab reporting limits for dissolved copper and cadmium were too high to use results for assessment.
	Town of Eager "Big Ditch" Project Site 2 - At golf course LCLCR174.26	2001 - 3 field 2002 - 12 field	Turbidity (former standard) NTU	10 (A&Wc)	5 - 29	3 of 15		
	ADEQ Ambient Monitoring Below South Fork of LCR LCLCR173.85 100581	2000 - 1 full suite 2001 - 3 full suites	Turbidity (former standard) NTU	10 (A&Wc)	6 - 21	1 of 4		
	ADEQ Ambient Monitoring Above South Fork of LCR LCLCR173.84 100580	1998 - 1 partial suite	No exceedances					
	Town of Eager "Big Ditch" Project Site 3 - At State Route 60 Port of Entry LCLCR172.98	2001 - 3 field 2002 - 12 field	Turbidity (former standard) NTU	10 (A&Wc)	9 - 33	12 of 15		
			Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.4 - 12.4	1 of 15		
	Summary Row A&Wc Not attaining FC Attaining FBC Attaining Agl Attaining AgL Attaining	1998 - 2002 50 samples 20 sampling events	Turbidity (former standard) NTU	10 (A&Wc)	3 - 21	18 of 50	Not attaining (see comment)	The Town of Eager collected 45 field samples, and ADEQ collected 5 samples from 1998-2002. A turbidity TMDL was completed for the Little Colorado River in 2002.
			Dissolved oxygen mg/L	> 7.0 (A&Wc)	6.4 - 12.4	1 of 50	Attaining	

TABLE 11. LITTLE COLORADO - SAN JUAN WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
Little Colorado River Nutrioso Creek - Camero Wash AZ15020001-009 A&Wc, FC, FBC, Agl, AgL	ADEQ Fixed Station Network Below Springerville WWTP LCLCR172.60 100331	1999 - 3 full + 1 partial suite 2000 - 4 full suites 2001 - 4 full suites 2002 - 1 full suite	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	260	1 of 12		
			Turbidity (former standard) NTU	10 (A&Wc)	5 - 24	9 of 12		
	Summary Row A&Wc Not attaining FC Attaining FBC Inconclusive Agl Attaining AgL Attaining	1999-2000 13 sampling events	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	260	1 of 12 events (in 2000)	Inconclusive	ADEQ collected 13 samples in 1999-2000. A turbidity TMDL was completed for the Little Colorado River in 2002. Assessed as "not attaining" due to exceedances of the former turbidity standard and placed on the Planning List for turbidity TMDL follow-up monitoring. Also placed on the Planning List due to <i>Escherichia coli</i> exceedance.
			Turbidity (former standard) NTU	10 (A&Wc)	5 - 24	9 of 12	Not attaining	
Little Colorado River unnamed reach (15020001-021) to Lyman Lake AZ15020001-005 A&Wc, FC, FBC, Agl, AgL	ADEQ Ambient Monitoring Above Lyman Lake LCLCR161.69 101174	2000 - 1 full suite 2001 - 3 full suites	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	<2 - 354	1 of 3		
			Turbidity (former standard) NTU	10 (A&Wc)	18 - 481	3 of 3		
	Summary Row A&Wc Not attaining FC Attaining FBC Inconclusive Agl Attaining AgL Attaining	2000-2001 4 sampling events	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	<2 - 354	1 of 3 events (in 2001)	Inconclusive	ADEQ collected 4 samples in 2000-2001. A turbidity TMDL was completed for the Little Colorado River in 2002. Assessed as "not attaining" due to exceedances of the former turbidity standard and placed on the Planning List for <i>Escherichia coli</i> exceedance and TMDL follow-up monitoring.
			Turbidity (former standard) NTU	10 (A&Wc)	18 - 481	3 of 3	Not attaining	
Little Colorado River HUC 15020001 boundary - unnamed tributary (15020002- 025) AZ15020002-024 A&Wc, FC, FBC, DWS, Agl, AgL	AGFD Routine Monitoring At Weinema Bridge LCLCR158.36	1999 - 1 partial suite 2000 - 1 partial suite	No exceedances					
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive AgL Inconclusive	2000 2 sampling events	No exceedances					Insufficient monitoring data to assess.
Little Colorado River Silver Creek - Carr Wash AZ15020002-004 A&Wc, FC, FBC, DWS, Agl, AgL	USGS & ADEQ Fixed Station Near Woodruff LCLCR120.11 100334	1998 - 1 partial suite 1999 - 1 full + 3 partial suites 2000 - 3 full + 1 partial suite 2001 - 4 full suites 2002 - 1 full + 1 partial suite	Arsenic (total) µg/L	50 (DWS, FBC)	<10 - 67	1 of 11		
			Barium (total) µg/L	2000 (DWS)	180 - 7,700	2 of 10		
			Beryllium (total) µg/L	4 (DWS)	<0.5 - 43	2 of 12		
			Chromium (total) µg/L	100 (DWS)	<10 - 120	1 of 12		
			Dissolved oxygen mg/L	>7 (90% saturation) (A&Wc)	8.3 - 10.2 (81 - 105%)	1 of 11		

TABLE 11. LITTLE COLORADO - SAN JUAN WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
			<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	<2 - 57,000	2 of 9 (2 in last 3-year period)		
			Lead (total) µg/L	15 (DWS, FBC)	<5 - 290	3 of 12		
				100 (AgL)		2 of 12		
			Manganese (total) µg/L	980 (DWS)	<50 - 9,800	2 of 12		
			Mercury (total) µg/L	0.6 (FC)	<0.5 - 0.97	1 of 12		
			Nickel (total) µg/L	140 (DWS)	<100 - 210	1 of 10		
			Suspended sediment conc. (SSC) mg/L	80 (geometric mean) (A&Wc)	248	1 of 1 sample		Insufficient data to calculate a geometric mean. Need a minimum of 4 samples. Not included in the final assessment.
			Turbidity (former standard) NTU	10 (A&Wc)	54 - >1000	8 of 8		
	Summary Row A&Wc Impaired FC Attaining FBC Impaired DWS Inconclusive AgL Attaining AgL Attaining	1998-2002 15 samples 15 sampling events	Arsenic (total) µg/L	50 (DWS, FBC)	<10 - 67	1 of 11	Attaining	ADEQ and USGS collected 19 samples in 1998-2002. Assessed as "impaired" due to <i>Escherichia coli</i> exceedances. EPA assessed this reach as impaired due to sediment, using exceedances of the former turbidity standard as evidence of a narrative bottom deposit violation. Placed on the Planning List due to lead exceedances.
			Barium (total) µg/L	2000 (DWS)	180 - 7,700	2 of 10	Attaining	
			Beryllium (total) µg/L	4 (DWS)	<0.5 - 43	2 of 12	Attaining	
			Chromium (total) µg/L	100 (DWS)	<10 - 120	1 of 12	Attaining	
			Dissolved oxygen mg/L	> 7 (90% saturation) (A&Wc)	6.3 - 10.2 (81 - 105%)	1 of 11	Attaining	
			<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	<2 - 57,000	2 of 9 events (In 2000 and 2001)	Impaired	
			Lead (total) µg/L	15 (DWS, FBC)	<5 - 290	3 of 12	Inconclusive	
				100 (AgL)	<5 - 371	2 of 12	Attaining	
			Manganese (total) µg/L	980 (DWS)	<50 - 9,800	2 of 12	Attaining	
			Mercury (total) µg/L	0.6 (FC)	<0.5 - 0.97	1 of 12	Attaining	

TABLE 11. LITTLE COLORADO - SAN JUAN WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
			Nickel (total) µg/L	140 (DWS)	<100 - 210	1 of 10	Attaining	
			Turbidity (former standard) NTU	10 (A&Wc)	54 - >1000	8 of 8	Impaired - evidence of narrative violation (see comment above right)	
Little Colorado River Zion Reservoir - Concho Creek AZ15020002-016 A&Wc, FBC, FC, DWS, Agl, Agl	USGS Fixed Station Near St. Johns #09386100 LCLCR143.39 101459	1999 - 5 SSC events 2000 - 9 SSC events 2001 - 5 SSC events 2002 - 3 SSC events	Suspended sediment concentration (SSC) mg/L	80 (geometric mean) (A&Wc)	8 - 2180	Geo means: 1999 = 183 2000 = 37 2001 = 25		Maximum base flow was calculated to be 17 cfs based on 30 years of flow data. Insufficient SSC data to calculate a geometric mean in 1998 or 2002.
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive	1999-2002 39 samples 22 sampling events	Suspended sediment concentration (SSC) mg/L	80 (geometric mean) (A&Wc)	8 - 2180	1 of 3 annual geo. means	Inconclusive	USGS collected 39 SSC samples during 22 sampling events in 1999-2002. Assessed as "Inconclusive" and placed on the Planning List due to SSC exceedance and missing core parameters: all except SSC.
Little Colorado River Porter Tank Draw - McDonalds Wash AZ15020008-017 A&Ww, FBC, FC, DWS, Agl, Agl	USGS Fixed Station Near Joseph City #09397300 LCLCR108.60 101480	1998 - 8 SSC events 1999 - 6 SSC events 2000 - 3 SSC events 2001 - 8 SSC events 2002 - 2 SSC events	Suspended sediment conc. (SSC) mg/L	80 (geometric mean) (A&Wc)	146 - 515,000	Geo means: 1998 = 49,029 1999 = 22,906 2001 = 47,248		Maximum base flow was calculated to be 2020 cfs based on 30 years of flow data. Insufficient monitoring data to calculate a geometric mean in 2000 or 2002.
	Summary Row A&Ww Impaired FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive	1998-2002 93 samples 27 sampling events	Suspended sediment concentration (SSC) mg/L	80 (geometric mean) (A&Wc)	146 - 515,000	3 of 3 annual geo. means	Impaired	USGS collected 93 SSC samples during 27 sampling events in 1998-2002. Reach was on the 2002 303(d) List due to past copper and silver exceedances (no current data). Assessed as "Impaired" due to past copper and silver exceedances and current SSC exceedances. Placed on the Planning List due to missing core parameters: all missing except SSC.
Little Colorado River, <u>East Fork</u> headwaters - Hall Creek AZ15020001-230 A&Wc, FBC, FC, AgL	ADEQ Ambient Monitoring Near Greer LCELR000.92 100948	2000 - 1 full suite 2001 - 3 full suites	No exceedances					Lab reporting limits for dissolved copper and cadmium were too high to use results for assessment.
	Summary Row A&Wc Inconclusive FC Attaining FBC Attaining Agl Attaining	2000-2001 4 sampling events	No exceedances					ADEQ collected 4 samples in 2000-2001. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: dissolved metals (copper and cadmium).

TABLE 11. LITTLE COLORADO - SAN JUAN WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
Little Colorado River, <u>South Fork</u> headwaters - Little Colorado R. AZ15020001-027 A&Wc, FC, FBC, AgL	ADEQ Biocriteria Program At S. Fork Campground LCSLR001.29 100644	1998 - 1 partial suite	No exceedances					Lab reporting limits for dissolved copper were too high to use results for assessment.
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	1998 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Little Colorado River, <u>West Fork</u> headwaters - Gov't Springs AZ15020001-013A A&Wc, FC, FBC Unique Water	ADEQ Biocriteria Program Mount Baldy Wilderness LCWLR004.09 100694	1998 - 1 partial suite	No exceedances					Lab reporting limits for dissolved copper and cadmium were too high to use results for assessment.
	ADEQ Ambient Monitoring Below Sheep's Crossing LCWLR003.30 100945	2000 - 1 partial suite 2001 - 2 full suites 2002 - 1 full suite	No exceedances					
	ADEQ Biocriteria Program Above Government Springs LCWLR001.08 100695	1998 - 1 partial suite	No exceedances					
	Summary Row A&Wc Inconclusive FC Attaining FBC Attaining	1998-2002 6 samples 5 sampling event	No exceedances					ADEQ collected 6 samples at 3 sites in 1998-2002. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: dissolved metals (copper and cadmium).
Little Colorado River, <u>West Fork</u> Gov't Springs - Little Colorado R. AZ15020001-013B A&Wc, FC, FBC, AgL	ADEQ Fixed Station Network At Government Springs LCWLR000.78 100328	1999 - 4 full suites 2000 - 4 full suites 2001 - 4 full suites 2002 - 1 full suite	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.3 - 10.7 (82 - 116%)	2 of 11		Low dissolved oxygen due to naturally occurring ground water upwelling (at spring), and not anthropogenic causes. Not included in final assessment. Lab reporting limits for 12 other copper and cadmium samples were too high to use results for assessments.
			Copper (dissolved) µg/L	varies by hardness (A&Wc chronic)	<10 - 13	1 of 1		
				varies by hardness (A&Wc acute)	<10 - 13	1 of 1		
	Summary Row A&Wc Inconclusive FC Attaining FBC Attaining AgL Attaining	1999-2002 13 sampling events	Copper (dissolved) µg/L	varies by hardness (A&Wc chronic)	<10 - 13	1 of 1 event	Inconclusive	ADEQ collected 13 samples in 1999-2002. Assessed as "attaining some uses" and placed on the Planning List due to copper exceedance and missing core parameters: dissolved metals (copper and cadmium).
				varies by hardness (A&Wc acute)	<10 - 13	1 of 1 event (In 2002)	Inconclusive	
Mineral Creek headwaters - Concho Creek AZ15020002-648 A&Wc, FC, FBC, AgL, AgL	ADEQ Ambient Monitoring Above Forest Road #404 LCMIN014.01 100593	2000 - 1 full suite 2001 - 3 full suites	Dissolved oxygen mg/L	>7.0 (90% saturation) (A&Wc)	6.4 - 9.9 (86 - 91%)	1 of 4		Lab reporting limits for dissolved copper were too high to use results for assessment.
	Summary Row A&Wc Inconclusive FC Attaining FBC Attaining AgL Attaining AgL Attaining	2000-2001 4 samples	Dissolved oxygen mg/L	> 7.0 (90% saturation) A&Wc	6.4 - 9.9 (86 - 91%)	1 of 4	Inconclusive	ADEQ collected 4 samples in 2000-2001. Assessed as "attaining some uses" and placed on the Planning List due to low dissolved oxygen and missing core parameter: dissolved copper.

TABLE 11. LITTLE COLORADO - SAN JUAN WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
Nutrioso Creek headwaters - Picnic Creek AZ15020001-017 A&Wc, FC, FBC, AgL, AgL	ADEQ Ambient Monitoring Near Nutrioso, Arizona LCNUT012.17 100936	2000 - 1 full suite 2001 - 3 full suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	5.1 - 9.2 (64 - 91%)	2 of 4		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in the final assessment.
			Turbidity (former standard) NTU	10 (A&Wc)	9 - 34	1 of 4		
	Summary Row A&Wc Not attaining FC Attaining FBC Attaining AgL Attaining AgL Attaining	2000-2001 4 samples	Turbidity (former standard) NTU	10 (A&Wc)	9 - 34	1 of 4	Inconclusive (Not attaining)	ADEQ collected 4 samples in 2000-2001. A turbidity TMDL was approved by EPA in 2000. Assessed as "not attaining" and placed on the Planning List for TMDL follow-up monitoring.
Porter Creek headwaters - Show Low Creek AZ15020005-246 A&Wc, FC, FBC, AgL	ADEQ Ambient Monitoring Above Scott Reservoir LCPRT001.23 101415	2002 - 1 full suite	Turbidity (former standard) NTU	10 (A&Wc)	14	1 of 1		Lab reporting limits for copper samples were too high to use results for assessment.
	AGFD Ambient Monitoring Above Scott Reservoir LCPRT001.17	1998 - 1 field, nutrients	No exceedances					
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	1998-2002 2 sampling events	Turbidity (former standard) NTU	10 (A&Wc)	14	1 of 1	Inconclusive (see comment)	Insufficient monitoring data to assess. Placed on the Planning List due to former turbidity standard exceedance. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.
Rio de Flag Flagstaff WWTP - San Francisco Wash AZ15020015-004B A&Wedw, PBC	ADEQ Ambient Monitoring At Doney Park, Flagstaff LCRDF002.97 10127	2000 - 1 full suite 2001 - 3 full suites	Turbidity (former standard) NTU	50 (A&Wedw)	4 - 71	1 of 4		
	Summary Row A&Wedw Inconclusive PBC Attaining	2000 - 2001 4 sampling events	Turbidity (former standard) NTU	50 (A&Wedw)	4 - 71	1 of 4	Inconclusive (see comment)	ADEQ collected 4 samples in 2000-2001. Assessed as "attaining some uses" and placed on the Planning List due to exceedance of former turbidity standard. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.
Show Low Creek headwaters - Linden Wash AZ15020005-012 A&Wc, FC, FBC, AgL, AgL	AGFD Routine Monitoring Above Show Low Lake LCSHL017.18	1998 - 1 field, nutrients	No exceedances					
	ADEQ Ambient Monitoring Near Show Low, AZ LCSHL011.06 100340	2000 - 1 full suite 2001 - 3 full suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	5.0 - 8.7 (73 - 110%)	1 of 4		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in the final assessment.
			Turbidity (former standard) NTU	10 (A&Wc)	15 - 58	3 of 3		
	AGFD Routine Monitoring Above Fools Hollow Lake LCSHL010.47	1998 - 1 field, nutrients	No exceedances					

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			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row A&Wc Inconclusive FC Attaining FBC Attaining Agl Attaining AgL Attaining	1998- 2001 6 samples 5 sampling events	Turbidity (former standard) NTU	10 (A&Wc)	15 - 58	3 of 5	Inconclusive (see comment)	AGFD and ADEQ collected 6 samples at 3 sites in 1998-2001. Assessed as "attaining some uses" and placed on the Planning List due to exceedance of the former turbidity standard. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.
Silver Creek headwaters - Show Low Creek AZ15020005-013 A&Wc, FC, FBC, Agl, AgL	ADEQ Ambient Monitoring Below AGFD hatchery LCSIL028.19 101125	2000 - 1 full suite 2001 - 3 full suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.5 - 10.0 (79 - 121%)	1 of 4		Lab reporting limits for dissolved copper were too high to use results for assessment.
			Turbidity (former standard) NTU	10 (A&Wc)	8 - 19.4	1 of 4		
	Summary Row A&Wc Inconclusive FC Attaining FBC Attaining Agl Attaining AgL Attaining	2000 - 2001 4 sampling events	Dissolved oxygen mg/L	> 7.0 (90% saturation) A&Wc	6.5 - 10.0 (70 - 121%)	1 of 4	Inconclusive	ADEQ collected 4 samples in 2000-2001. Assessed as "attaining some uses" and placed on the Planning List due to low dissolved oxygen, a missing core parameter (dissolved copper), and an exceedance of the former turbidity standard. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.
			Turbidity (former standard) NTU	10 (A&Wc)	8 - 19.4	1 of 4	Inconclusive (see comment)	
Silver Creek Seven-Mile Draw - Little Colorado River AZ15020005-001 A&Wc, FC, FBC, Agl, AgL	ADEQ Ambient Monitoring Near Snowflake LCSIL004.78 100337	2002 - 1 full suite	Turbidity (former standard) NTU	10 (A&Wc)	136	1 of 1		
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive AgL Inconclusive	2002 1 sampling event	Turbidity (former standard) NTU	10 (A&Wc)	136	1 of 1	Inconclusive (see comment)	Insufficient monitoring data to assess. Placed on the Planning List due to former turbidity standard exceedances. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.
LAKE MONITORING DATA								
Ashurst Lake AZL15020015-0090 A&Wc, FC, FBC, Agl, AgL	ADEQ Lakes Program LCASH-A (at dam) 100973	2000 - 1 full + 1 partial suite 2001 - 2 partial suites	Turbidity (former standard) NTU	10 (A&Wc)	114 - 120	3 of 3		Lab reporting limits for copper were too high to use results for assessment.
	ADEQ Lakes Program LCASH-B (mid lake) 101294	2001 - 1 full suite	Turbidity (former standard) NTU	10 (A&Wc)	116	1 of 1		
	ADEQ Lakes Program LCASH-BR (boat ramp) 101327	2001 - 1 <i>Escherichia coli</i>	No exceedances					

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			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
	Summary Row A&Wc Inconclusive FC Attaining FBC Inconclusive Agl Attaining AgL Attaining	2000-2001 6 samples 4 sampling events	Turbidity (former standard) NTU	10 (A&Wc)	114 - 120	4 of 4	Inconclusive (see comment)	ADEQ collected 6 samples in 2000-2001. Assessed as "attaining some uses" and placed on the Planning List due to: 1. Former turbidity standard exceedances. The causes and sources of turbidity will be investigated during the next monitoring cycle for this watershed. 2. Missing core parameters: <i>Escherichia coli</i> and dissolved metals (cadmium, copper, and zinc).
Bear Canyon Lake AZ15020008-0130 A&Wc, FC, FBC, Agl, AgL	ADEQ Lakes Program LCBCL-A (deepest) 100969	2000 - 1 full suite 2001 - 3 full suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.6 - 8.0 (79 - 85%)	1 of 4		Lab detection limits for dissolved metals (cadmium, copper, and zinc) were too high to use results for assessments.
			pH SU	6.5 - 9.0 (A&Wc, FBC, Agl, AgL)	5.8 - 6.8	3 of 4		
			Selenium µg/L	2.0 (A&Wc chronic)	< 2 - 3	1 of 4		
	ADEQ Lakes Program LCBCL-B (mid lake) 100970	2000 - 1 partial suite	Dissolved oxygen mg/L	> 7 (90% saturation) (A&Wc)	6.7 (80%)	1 of 1		
			pH SU	6.5 - 9.0 (A&Wc, FBC, Agl, AgL)	6.1	1 of 1		
	ADEQ Lakes Program LCBCL-BR (boat ramp) 100970	2001 - 1 <i>Escherichia coli</i>	No exceedances					
	Summary Row A&Wc Impaired FC Attaining FBC Impaired Agl Impaired AgL Impaired	2000 - 2001 6 samples 4 sampling events	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.6 - 8.0 (79 - 85%)	2 of 5	Inconclusive	ADEQ collected 6 samples at 3 sites in 2000 - 2001. EPA assessed this lake as "Impaired" due to pH exceedances. Placed on the Planning List due to low dissolved oxygen, selenium exceedances, and missing core parameters: <i>Escherichia coli</i> and dissolved metals (copper, cadmium, and zinc).
	pH SU	6.5 - 9.0 (A&Wc, FBC, Agl, AgL)	5.8 - 6.8	4 of 5	Inconclusive			
	Selenium µg/L	2.0 (A&Wc chronic)	< 2 - 3	1 of 4 events	Inconclusive			
Blue Ridge Reservoir AZL15020008-0200 A&Wc, FC, FBC, Agl, AgL	ADEQ Lakes Program LCBRR-A (deepest) 100974	2000 - 1 partial suite 2001 - 1 full + 2 partial suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.7 - 11.0 (73 - 121%)	1 of 3		Lab reporting limits for dissolved metals (cadmium, copper, and zinc) were too high to use results for assessment.
	ADEQ Lakes Program LCBRR-C 101293	2001 - 1 partial suite	No exceedances					
	Summary Row A&Wc Inconclusive FC Attaining FBC Inconclusive Agl Attaining AgL Attaining	2000 - 2001 5 samples 4 sampling events	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.7 - 11.0 (73 - 121%)	1 of 3	Inconclusive	ADEQ collected 5 samples at 2 sites in 2000 - 2001. Assessed as "attaining some uses" and placed on the Planning List due to low dissolved oxygen and missing core parameters: <i>Escherichia coli</i> and dissolved metals (copper, cadmium, and zinc).
Bunch Reservoir AZL15020001-0230 A&Wc, FC, FBC, Agl, AgL	AGFD Ambient Monitoring LCBUN - MID LAKE	2001 - 3 partial suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	5.6 - 8.2 (66 - 99%)	2 of 3		

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			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row	2001	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	5.6 - 8.2 (66 - 90%)	2 of 3	Inconclusive	AGFD collected 3 samples in 2001. Assessed as "inconclusive" and placed on the Planning List due to low dissolved oxygen and missing core parameters: turbidity, <i>Escherichia coli</i> , total boron, dissolved metals (copper, cadmium, and zinc), and total metals (mercury and lead).
	A&Wc Inconclusive	3 sampling events						
	FC Inconclusive							
	FBC Inconclusive							
Camero Lake AZL15020001-0260 A&Wc, FC, FBC, AgL	AGFD Ambient Monitoring LCCAR-MID LAKE	2001 - 3 partial suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	3.9 - 7.5 (55 - 97%)	1 of 3		AGFD collected 3 samples in 2001. Assessed as "inconclusive" and placed on the Planning List due to low dissolved oxygen, high pH, and missing core parameters: turbidity, <i>Escherichia coli</i> , dissolved metals (copper, cadmium, and zinc), and total metals (mercury and lead).
			pH SU	6.5 - 9.0 (A&Wc, FBC, AgL)	8.3 - 9.9	2 of 3		
	Summary Row	2001	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	3.9 - 7.5 (55 - 97%)	1 of 3	Inconclusive	
	A&Wc Inconclusive	3 sampling events						
Cholla Lake AZL15020008-0320 A&Ww, FC, FBC	AGFD Ambient Monitoring LCCHO - MID LAKE	1999 - 3 partial suites 2001 - 1 partial suite	No exceedances					Lab reporting limits for mercury were too high to use results for assessment.
	AGFD Ambient Monitoring Warmwater inflow LCCHO - INFLOW	1999 - 3 partial suites 2001 - 1 partial suite	No exceedances					
	Summary Row	1999-2001	No exceedances					
	A&Ww Inconclusive	8 samples 4 sampling events						
Clear Creek Reservoir AZL15020008-0340 A&Wc, FC, FBC, DWS, AgL, AgL	AGFD Ambient Monitoring Above Forest Road #99 LCCCR - 1	1999 - 3 partial suites	No exceedances					AGFD collected 8 samples in 1999-2001. Assessed as "inconclusive" and placed on the Planning List due to a fish kill in 2002 and missing core parameters: turbidity, <i>Escherichia coli</i> , total mercury, and dissolved metals (copper, cadmium, and zinc).
	AGFD Ambient Monitoring Dam Site LCCCR - DAM SITE	1999 - 2 partial suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.3 - 7.6 (79 - 99%)	1 of 2		
	Summary Row	1999	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.3 - 7.6	1 of 5	Inconclusive	
	A&Wc Inconclusive	5 samples 3 sampling events						
Kinnikinnick Lake AZL15020015-0730 A&Wc, FC, FBC, AgL	ADEQ Lakes Program LCKIN - A (deepest) 100971	2000 - 1 partial suite 2001 - 2 full + 1 partial suites 2002 - 1 partial suite	Turbidity (former standard) NTU	10 (A&Wc)	66 - 71	5 of 5		Lab reporting limits for dissolved cadmium and copper were too high to use results for assessment.
			Selenium µg/L	2.0 (A&Wc chronic)	<2 - 3	1 of 4		
	ADEQ Lakes Program LCKIN - B (mid lake) 100972	2000 - 1 partial suite 2001 - 1 partial suite	Turbidity (former standard) NTU	10 (A&Wc)	60 - 69	2 of 2		
	ADEQ Lakes Program LCKIN - BR (boat ramp) 100972	2001 - 1 <i>Escherichia coli</i>	No exceedances					

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			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
	Summary Row	2000 - 2002	Turbidity (former standard) NTU	10 (A&Wc)	60 - 71	7 of 7	Inconclusive	ADEQ collected 8 samples at 3 sites in 2000 - 2002. Assessed as "attaining some uses" and placed on the Planning List due to: 1. Selenium exceedances. 2. Missing core parameters: dissolved metals (copper, cadmium, and zinc) and <i>Escherichia coli</i> . 3. Former turbidity standard exceedances. The causes and sources of turbidity will be investigated during the next monitoring cycle for this watershed.
	A&Wc Inconclusive FC Attaining FBC Inconclusive Agl Attaining	8 samples 4 sampling events	Selenium µg/L	2 (A&Wc chronic)	<2 - 3	1 of 4 events	Inconclusive	
Lake Mary -- (Upper) AZL15020015-0900 A&Wc, FC, FBC, DWS, AgL	ADEQ Lakes Program LCMAU - A (deepest) 100029	2002 - 1 partial suite	Turbidity (former standard) NTU	10 (A&Wc)	70	1 of 1		Lab reporting limits for dissolved cadmium and copper were too high to use results for assessment. All samples collected on the same date.
	ADEQ Lakes Program LCMAU - B (mid lake) 101312	2002 - 1 partial suite	Turbidity (former standard) NTU	10 (A&Wc)	67	1 of 1		
	ADEQ Lakes Program LCMAU - C 101314	2002 - 1 partial suite	Turbidity (former standard) NTU	10 (A&Wc)	69	1 of 1		
	Summary Row A&Wc Inconclusive FC Impaired* FBC Inconclusive DWS Inconclusive Agl Inconclusive	2002 3 samples 1 sampling event	Turbidity (former standard) NTU	10 A&Wc	67 - 70	3 of 3 samples (1 of 1 event)	Inconclusive (see comment)	"Assessed as "impaired" due to mercury in fish tissue. EPA placed this reach on the 2002 303(d) List because mercury in fish tissue led to a fish consumption advisory in 2002. Once listed, the lake cannot be delisted until a TMDL is complete or there are sufficient data collected to indicate that mercury in fish tissue is no longer a concern (fish consumption advisory is removed). Also on the Planning List due to: 1. Former turbidity standard exceedances. The causes and sources of turbidity will be investigated during the next monitoring cycle for this watershed. 2. Insufficient monitoring data.
Lee Valley Reservoir AZL15020001-0770 A&Wc, FC, FBC, AgL, AgL	AGFD Ambient Monitoring LCLEE	1998 - 3 partial suites	No exceedances					Lab reporting limits for dissolved cadmium and copper were too high to use results for assessment.
	ADEQ Lakes Program LCLEE - A (deepest) 101356	2001 - 1 partial suite 2002 - 2 partial suites	No exceedances					
	ADEQ Lakes Program LCLEE - SH (shoreside) 101357	2002 - 2 <i>Escherichia coli</i>	No exceedances					
	Summary Row A&Wc Inconclusive FC Attaining FBC Inconclusive Agl Attaining Agl Attaining	1998 - 2002 8 samples 6 sampling events	No exceedances					ADEQ and AGFD collected 8 samples in 1998 - 2002. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: <i>Escherichia coli</i> and dissolved metals (cadmium and copper).
Long Lake (Lower) AZL15020008-0820 A&Wc, FC, FBC, AgL, AgL	AGFD Ambient Monitoring North end LCLLL - North	1998 - 3 partial suites	No exceedances					
	AGFD Ambient Monitoring South Cove LCLLL - South	1998 - 3 partial suites 2001 - 1 partial suite	No exceedances					

TABLE 11. LITTLE COLORADO - SAN JUAN WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row	1998 - 2001	No exceedances					AGFD collected 7 samples in 1998 - 2001. EPA assessed this lake as "impaired" due to mercury in fish tissue. Fish consumption advisory issued in 2003.
	A&Wc Inconclusive FC Impaired FBC Inconclusive Agl Inconclusive AgL Inconclusive	7 samples 3 sampling events						Placed on the Planning List due to: 1. Insufficient water column monitoring, 2. Missing core parameters: turbidity, <i>Escherichia coli</i> , total boron, total metals (mercury, manganese, copper, and lead), and dissolved metals (copper, cadmium, and zinc).
Lyman Lake AZL15020001-0850 A&Wc, FC, FBC, Agl, AgL	AGFD Ambient Monitoring LCLYM - A (dam site)	1998 - 1 partial suite	No exceedances					
	Summary Row	1997-1998	No exceedances					EPA assessed this lake as "impaired" due to mercury in fish tissue. Fish consumption advisory issued in 2002.
	A&Wc Inconclusive FC Impaired FBC Inconclusive Agl Inconclusive AgL Inconclusive	1 sampling event						Placed on the Planning List due to missing core parameters: turbidity, field pH, <i>Escherichia coli</i> , dissolved metals (copper, cadmium, and zinc), and total metals (mercury, copper, and lead).
Nelson Reservoir AZL15020001-1000 A&Wc FC, FBC, Agl, AgL	AGFD Ambient Monitoring LCNEL - DAM SITE	1998 - 1 partial suite	No exceedances					
	Summary Row	1998	No exceedances					Insufficient monitoring data to assess.
	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive AgL Inconclusive	1 sampling event						
Rainbow Lake AZL15020005-1170 A&Wc, FC, FBC, Agl, AgL	ADEQ Lakes Program LCRAI - A (deepest) 100069	2002 - 1 full suite	No exceedances					
	ADEQ Lakes Program LCRAI - B (mid lake) 100070	2002 - 1 partial suite	No exceedances					
	ADEQ Lakes Program LCRAI - BR (boad ramp) 101402	2002 - 1 <i>Escherichia coli</i>	No exceedances					
	Summary Row	2002	No exceedances					Nutrient TMDL completed in 2000. This lake will remain "not attaining" until there are sufficient data to indicate that dissolved oxygen, pH, and nutrients are supporting designated uses.
	A&Wc Not attaining FC Inconclusive FBC Not attaining Agl Not attaining AgL Not attaining	3 samples 1 sampling event						
River Reservoir AZL15020001-1220 A&Wc, FC, FBC, Agl, AgL	AGFD Ambient Monitoring LCRIV-MID (mid lake)	2001 - 3 partial suites	No exceedances					
	Summary Row	2001	No exceedances					AGFD collected 3 samples in 2001. Assessed as "inconclusive" and placed on the Planning List due to missing core parameters: turbidity, <i>Escherichia coli</i> , total boron, total metals (mercury and lead), and dissolved metals (copper, cadmium and zinc).
	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive AgL Inconclusive	3 sampling events						

TABLE 11. LITTLE COLORADO - SAN JUAN WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
Soldiers Annex Lake AZL15020008-1430 A&Wc FC, FBC, Agl, AgL	AGFD Ambient Monitoring LCNEL - DAM SITE	2001 - 1 partial suite	No exceedances					
	Summary Row	2001	No exceedances					EPA assessed this lake as "impaired" for mercury in fish tissue. Fish consumption advisory issued in 2003. Placed on the Planning List due to insufficient water column monitoring.
	A&Wc Inconclusive FC Impaired FBC Inconclusive Agl Inconclusive AgL Inconclusive	1 sampling event						
Soldiers Lake AZL15020008-1440 A&Wc, FC, FBC, Agl, AgL	ADEQ Priority Pollutant Program - fish tissue	Data not shown No water quality data						
	Summary Row							EPA assessed this lake as "impaired" for mercury in fish tissue. Fish consumption advisory issued in 2003. Placed on the Planning List due to insufficient water column monitoring.
	A&Wc Inconclusive FC Impaired FBC Inconclusive Agl Inconclusive AgL Inconclusive							
Tunnel Reservoir AZL15020001-1550 A&Wc FC, FBC, Agl, AgL	AGFD Ambient Monitoring LCNEL - MID LAKE	2001 - 3 partial suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	4 - 8.1 (56 - 97%)	1 of 3		
	Summary Row	2001	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	4 - 8.1 (56 - 97%)	1 of 3	Inconclusive	AGFD collected 3 samples in 2001. Assessed as "inconclusive" and placed on the Planning List due to low dissolved oxygen and missing core parameters: turbidity, <i>Escherichia coli</i> , total boron, total metals (mercury, manganese, and lead), and dissolved metals (copper, cadmium, and zinc).
	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive AgL Inconclusive	3 sampling events						
Woods Canyon Lake AZL15020010-1700 A&Wc, FC, FBC, DWS, Agl, AgL	ADEQ Lakes Program LCWCL - A (deepest) 100092	2000 - 1 partial suite 2001 - 2 full + 1 partial suite	No exceedances					
	ADEQ Lakes Program LCWCL - B (mid lake) 10093	2000 - 1 full suite 2001 - 2 full suites	No exceedances					
	ADEQ Lakes Program LCWCL - BR (boat ramp) 101324	2001 - 1 <i>Escherichia coli</i>	No exceedances					
	Summary Row A&Wc Inconclusive FC Attaining FBC Inconclusive DWS Attaining Agl Attaining AgL Attaining	2000 - 2001 8 samples 4 sampling events	No exceedances					

TABLE 12. LITTLE COLORADO-SAN JUAN WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
LITTLE COLORADO-SAN JUAN WATERSHED – STREAM ASSESSMENTS				
Barbershop Canyon Creek headwaters - East Clear Creek 10 miles AZ15020008-537	A&Wc Inconclusive FC Attaining FBC Attaining AgL Attaining Category 2 – Attaining Some Uses	On the Planning List due to <u>missing core parameter</u> : dissolved copper.		
Billy Creek headwaters - Show Low Creek 19 miles AZ15020005-019	A&Wc Inconclusive FC Attaining FBC Inconclusive AgL Attaining Category 2 – Attaining Some Uses	On the Planning List due to: 1. <u>Escherichia coli</u> exceedance (1 of 4 sampling events). 2. Former <u>turbidity</u> standard exceedances (3 of 8 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring. 3. <u>Missing core parameter</u> : dissolved copper.		
Brown Creek headwaters - Silver Creek 15 miles AZ15020005-016	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Category 3 – Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 2 samples).		
Buck Springs Canyon Creek headwaters - Leonard Canyon 7 miles AZ15020008-557	A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive Category 3 – Inconclusive	On the Planning List. No current data. Added in 2002 due to: 1. <u>Turbidity</u> exceedance (1 of 1 sample). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring. 2. <u>Low pH</u> (1 of 1 sample). 3. <u>Missing core parameters</u> .		
Chevelon Creek headwaters - West Chevelon Creek 32 miles AZ15020010-006	A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive Category 3 – Inconclusive	On the Planning List. No current data. Added in 2002 due to: 1. <u>Low dissolved oxygen</u> . 2. <u>Missing core parameters</u> .		
Chevelon Creek Black Canyon - Little Colorado River 19 miles AZ15020010-001	A&Wc Inconclusive FC Attaining FBC Attaining AgL Attaining Category 2 – Attaining Some Uses	On the Planning List due to former <u>turbidity</u> standard exceedances (4 of 4 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.		
Colter Creek headwaters - Nutrioso Creek 9 miles AZ15020001-293	A&Wc Inconclusive FC Attaining FBC Attaining AgL Attaining Category 2 – Attaining Some Uses	On the Planning List due to <u>missing core parameter</u> : dissolved copper.		
East Clear Creek headwaters - Yeager Canyon 38 miles AZ15020008-009	A&Wc Inconclusive FC Attaining FBC Attaining AgL Attaining Category 2 – Attaining Some Uses	On the Planning List due to: 1. <u>Low dissolved oxygen</u> (2 of 4 samples). 2. <u>Missing core parameter</u> : dissolved copper.		
Fish Creek headwaters - Little Colorado River 9 miles AZ15020001-211	A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive Category 3 – Inconclusive	On the Planning List due to: 1. Insufficient monitoring data to assess (only 1 sample). 2. <u>Mercury</u> exceedance (1 of 1 sample).		

TABLE 12. LITTLE COLORADO-SAN JUAN WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Hall Creek headwaters - Little Colorado River 14 miles AZ15020001-012	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 3 -- Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Lee Valley Creek Lee Valley Reservoir - East Fork Little Colorado River 3 miles AZ15020001-232B	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 -- Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Little Colorado River West Fork Little Colorado - Water Canyon Creek 20 miles AZ15020001-011	A&Wc Not attaining FC Attaining FBC Attaining Agl Attaining Agl Attaining Category 4A -- Not attaining	On the Planning List for: 1. Turbidity TMDL follow-up monitoring. Turbidity still exceeding former standard in 18 of 50 samples. Turbidity and suspended sediment concentration (SSC) monitoring will be scheduled during the next monitoring cycle for this watershed. 2. Missing core parameters: dissolved metals (copper and cadmium).		A turbidity TMDL was approved by EPA in 2002 for the two reaches immediately downstream. Implementation of strategies identified in that TMDL should also bring this reach into compliance with its standards. Therefore, assessed as "not attaining" and placed on the Planning List for TMDL follow-up monitoring.
Little Colorado River Water Canyon Creek - Nutrioso Creek 4 miles AZ15020001-010	A&Wc Not attaining FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 4A -- Not attaining	On the Planning List. No current data. Added in 2002 for turbidity TMDL follow-up monitoring (turbidity exceedances then in 5 of 6 samples). Turbidity and suspended sediment concentration (SSC) monitoring will be scheduled during the next monitoring cycle for this watershed.		A turbidity TMDL was approved by EPA in 2002. Placed on the Planning List in 2002 for TMDL follow-up monitoring.
Little Colorado River Nutrioso Creek - Carrero Wash 12 miles AZ15020001-009	A&Wc Not attaining FC Attaining FBC Inconclusive Agl Attaining Agl Attaining Category 4A -- Not attaining	On the Planning List for: 1. <i>Escherichia coli</i> exceedance (1 of 12 sampling events, occurred in 2000). 2. Turbidity TMDL follow-up monitoring. Former turbidity standard exceeded in 9 of 12 samples. Turbidity and suspended sediment concentration (SSC) monitoring will be scheduled during the next monitoring cycle for this watershed.		A turbidity TMDL was approved by EPA in 2002. Placed on the Planning List for TMDL follow-up monitoring.
Little Colorado River unnamed tributary 15020001-021 to Lyman Lake 3 miles AZ15020001-005	A&Wc Not attaining FC Attaining FBC Inconclusive Agl Attaining Agl Attaining Category 4A -- Not attaining	On the Planning List due to: 1. <i>Escherichia coli</i> exceedance (1 of 3 sampling events). 2. Turbidity TMDL follow up monitoring. Former turbidity standard exceeded in 3 of 3 samples. Turbidity and suspended sediment concentration (SSC) monitoring will be scheduled during the next monitoring cycle for this watershed.		A turbidity TMDL was approved by EPA in 2002 for two reaches only 3.2 miles upstream (15020001-010 and -009). Implementation of strategies identified in that TMDL should also bring this reach into compliance with its standards. Therefore, assessed as "not attaining" and placed on the Planning List for TMDL follow-up monitoring.
Little Colorado River HUC 15020001 boundary - unnamed tributary 15020002-025 14 miles AZ15020002-024	A&Wc Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive Category 3 -- Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 2 samples).		
Little Colorado River Silver Creek - Carr Wash 6 miles AZ15020002-004	A&Wc Impaired FC Attaining FBC Impaired DWS Inconclusive Agl Attaining Agl Attaining Category 5 -- Impaired	On the Planning List due to <u>lead</u> exceedances (3 of 12 samples).	Add <i>Escherichia coli</i> to the 303(d) List due to exceedances in 2 of 9 sampling events. Sediment added to the 2004 303(d) List by EPA, using exceedances of the former turbidity standard (8 of 8 samples) as evidence of a narrative bottom deposit violation.	

TABLE 12. LITTLE COLORADO-SAN JUAN WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Little Colorado River Zion Reservoir - Concho Creek 7 miles AZ15020002-016	A&Wc Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List due to: 1. <u>Suspended sediment concentration (SSC) geometric mean exceedance.</u> 2. <u>Missing core parameters</u> (only SSC data were collected).		
Little Colorado River Porter Tank - McDonalds Wash 17 miles AZ15020008-017	A&Ww Impaired FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive Category 5 — Impaired	On the Planning List due to: 1. <u>Missing core parameters</u> (only SSC data was collected).	On the 303(d) List (since 1992) due to <u>copper and silver</u> exceedances. ADEQ initiated a silver and copper TMDL investigation in 2002. Add <u>suspended sediment concentration</u> to the 303(d) List due to 1 of 3 annual geo. mean exceedances.	
Little Colorado River, <u>East Fork</u> headwaters - Hall Creek 11 miles AZ15020001-230	A&Wc Inconclusive FC Attaining FBC Attaining Agl Attaining Category 2 — Attaining Some Uses	On the Planning List due to <u>missing core parameters</u> : dissolved metals (copper and cadmium).		
Little Colorado River, <u>South Fork</u> headwaters - Little Colorado River 12 miles AZ15020001-027	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Little Colorado River, <u>West Fork</u> headwaters - Government Springs 8 miles AZ15020001-013A Unique Water	A&Wc Inconclusive FC Attaining FBC Attaining Category 2 — Attaining Some Uses	On the Planning List due to <u>missing core parameters</u> : dissolved metals (copper and cadmium).		
Little Colorado River, <u>West Fork</u> Government Springs - Little Colorado River 1 mile AZ15020001-013B	A&Wc Inconclusive FC Attaining FBC Attaining Agl Attaining Category 2 — Attaining Some Uses	On the Planning List due to: 1. <u>Acute and chronic copper</u> exceedance (1 of 1 sampling event). 2. <u>Missing core parameters</u> : dissolved metals (copper and cadmium).		
Mineral Creek headwaters - Concho Creek 26 miles AZ15020002-648	A&Wc Inconclusive FC Attaining FBC Attaining Agl Attaining Agl Attaining Category 2 — Attaining Some Uses	On the Planning List due to: 1. Low <u>dissolved oxygen</u> (1 of 4 samples). 2. <u>Missing core parameter</u> : dissolved copper.		
Nutrios Creek headwaters - Picnic Creek 27 miles AZ15020001-017	A&Wc Not attaining FC Attaining FBC Attaining Agl Attaining Agl Attaining Category 4A — Not attaining	On the Planning List for <u>turbidity</u> TMDL follow-up monitoring. Turbidity exceeded the former standard in 1 of 4 samples. Turbidity and suspended sediment concentration (SSC) monitoring will be scheduled during the next monitoring cycle for this watershed.		A <u>turbidity</u> TMDL was approved by EPA in 2000. Added to the Planning List in 2002 for TMDL follow-up monitoring.
Nutrios Creek Picnic Creek - Little Colorado River 4 miles AZ15020001-015	A&Wc Not attaining FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 4A — Not attaining	On the Planning List for: 1. <u>Turbidity</u> TMDL follow-up monitoring. Turbidity and suspended sediment concentration (SSC) monitoring will be scheduled during the next monitoring cycle for this watershed. 2. <u>Insufficient monitoring</u> (no current monitoring data).		A <u>turbidity</u> TMDL was approved by EPA in 2000. Added to the Planning List in 2002 for TMDL follow-up monitoring.

TABLE 12. LITTLE COLORADO-SAN JUAN WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Porter Creek headwaters - Show Low Creek 4 miles AZ15020005-246	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List due to: 1. Insufficient monitoring data to assess (only 2 samples). 2. Former turbidity standard exceedance (1 of 1 sample). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.		
Rio de Flag Flagstaff WWTP - San Francisco Wash 23 miles AZ15020015-004B	A&Wedw Inconclusive PBC Attaining Category 2 — Attaining Some Uses	On the Planning List due to former turbidity standard exceedance (1 of 4 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.		
Show Low Creek headwaters - Linden Wash 41 miles AZ15020005-012	A&Wc Inconclusive FC Attaining FBC Attaining Agl Attaining Agl Attaining Category 2 — Attaining Some Uses	On the Planning List due to former turbidity standard exceedances (3 of 5 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.		
Silver Creek headwaters - Show Low Creek 34 miles AZ15020005-013	A&Wc Inconclusive FC Attaining FBC Attaining Agl Attaining Agl Attaining Category 2 — Attaining Some Uses	On the Planning List due to: 1. Low dissolved oxygen (1 of 4 samples). 2. Missing core parameter: dissolved copper. 3. Former turbidity standard exceedance (1 of 4 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.		
Silver Creek Seven-Mile Draw - Little Colorado River 9 miles AZ15020005-001	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List due to: 1. Insufficient monitoring data to assess (only 1 sample). 2. Exceedance of the former turbidity standard (1 of 1 sample). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.		
Walnut Creek Pine Lake - Rainbow Lake 9 miles AZ15020005-238	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 — Inconclusive	No current data. Added to the Planning List in 2002 due to missing core parameters.		
Willow Creek headwaters - East Clear Creek 32 miles AZ15020008-011	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 — Inconclusive	No current data. Added to the Planning List in 2002 due to missing core parameters.		
Willow Springs Canyon Creek headwaters - Chevelon Creek 9 miles AZ15020010-240 (previously listed as Willow Spring Creek)	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 — Inconclusive	No current monitoring data. Added to the Planning List in 2002 due to missing core parameters.		
Woods Canyon Creek headwaters - Chevelon Creek 13 miles AZ15020010-084	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 — Inconclusive	No current monitoring data. Added to the Planning List in 2002 due to low dissolved oxygen (1 of 2 samples).		

TABLE 12. LITTLE COLORADO-SAN JUAN WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
LITTLE COLORADO-SAN JUAN WATERSHED – LAKE ASSESSMENTS				
Ashurst Lake 201 acres AZL15020015-0090	A&Wc Inconclusive FC Attaining FBC Inconclusive Agl Attaining Agl Attaining Category 2 – Attaining Some Uses Trophic Status – Eutrophic	On the Planning List due to: 1. Missing core parameters: <i>Escherichia coli</i> and dissolved metals (copper, cadmium, and zinc). 2. Former turbidity standard exceedances (4 of 4 samples). Causes and sources of turbidity will be investigated during the next monitoring cycle for this watershed.		
Bear Canyon Lake 55 acres AZL15020008-0130	A&Wc Impaired FC Attaining FBC Impaired Agl Impaired Agl Impaired Category 5 – Impaired Trophic Status – Mesotrophic	On the Planning List due to: 1. Low dissolved oxygen (2 of 5 samples). 2. Chronic selenium exceedance (1 of 4 sampling events). 3. Missing core parameters: <i>Escherichia coli</i> and dissolved metals (copper, cadmium, and zinc).	pH added to the 2004 303(d) List by EPA (4 of 5 exceedances).	
Black Canyon Lake 37 acres AZL15020010-0180	A&Wc Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive Category 3 – Inconclusive Trophic Status not calculated	On the Planning List due to: 1. A fish kill in 2002 related to the Rodeo-Chediski Fire. This may be evidence of narrative standards violations. Monitoring is needed to determine long-term negative impacts from the fire. 2. No current monitoring data.		
Blue Ridge Reservoir 293 acres AZL15020008-0200	A&Wc Inconclusive FC Attaining FBC Inconclusive Agl Attaining Agl Attaining Category 2 – Attaining Some Uses Trophic Status – Mesotrophic	On the Planning List due to: 1. Low dissolved oxygen (1 of 3 samples). 2. Missing core parameters: <i>Escherichia coli</i> and dissolved metals (copper, cadmium, and zinc).		
Bunch Reservoir 64 acres AZL15020001-0230	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 3 – Inconclusive Trophic Status not calculated	On the Planning List due to: 1. Low dissolved oxygen (2 of 3 samples). 2. Missing core parameters: <i>Escherichia coli</i> , dissolved metals (copper, cadmium, and zinc), total boron, total metals (mercury and lead), and turbidity.		
Camero Lake 67 acres AZL15020001-0260	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 – Inconclusive Trophic Status not calculated	On the Planning List due to: 1. Low dissolved oxygen (1 of 3 samples). 2. High pH (2 of 3 samples). 3. Missing core parameters: <i>Escherichia coli</i> , turbidity, dissolved metals (copper, cadmium, and zinc), and total metals (mercury and lead).		
Cholla Lake 130 acres AZL15020008-0320	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 – Inconclusive Trophic status – Hypereutrophic	On the Planning List due to: 1. Missing core parameters: <i>Escherichia coli</i> , turbidity, dissolved metals (copper, cadmium, and zinc), and total mercury. 2. Fish kill in 2002 was related to resuspension of sediment nutrient loads. This may be evidence of a narrative standards violations.		

TABLE 12. LITTLE COLORADO-SAN JUAN WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

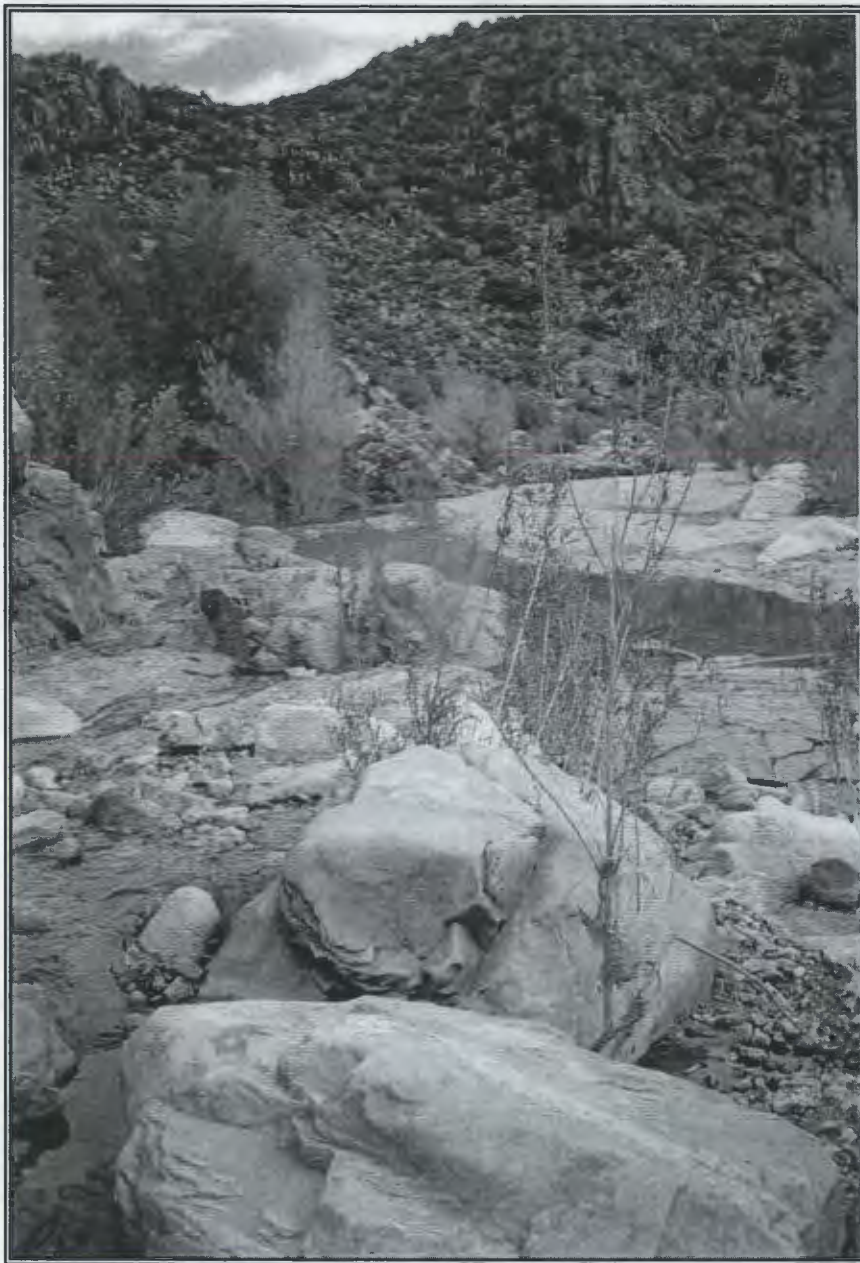
SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Clear Creek Reservoir 29 acres AZL15020008-0340	A&Wc Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Attaining Category 2 — Attaining Some Uses Trophic status — Eutrophic	On the Planning List due to: 1. Low dissolved oxygen (1 of 5 samples). 1. <u>Missing core parameters:</u> <i>Escherichia coli</i> , turbidity, dissolved metals (copper, cadmium, and zinc), total fluoride, total boron, and total mercury.		
Kinnikinnick Lake 114 acres AZL15020015-0730	A&Wc Inconclusive FC Attaining FBC Inconclusive Agl Attaining Category 2 — Attaining Some Uses Trophic status — Eutrophic	On the Planning List due to: 1. Former <u>turbidity</u> standard exceedances (7 of 7 samples). Causes and sources of turbidity will be investigated during the next monitoring cycle for this watershed. 2. Chronic <u>selenium</u> exceedance (1 of 4 sampling events). 3. <u>Missing core parameters:</u> <i>Escherichia coli</i> and dissolved metals (copper, cadmium, and zinc).		
Lake Mary (lower) 764 acres AZL15020015-0890	A&Wc Inconclusive FC Impaired FBC Inconclusive Agl Inconclusive Category 5 — Impaired Trophic status not calculated	On the Planning List due to insufficient monitoring data (no current water quality monitoring data).	EPA placed this reach on the 2002 303(d) List due to the <u>mercury</u> fish consumption advisory issued in 2002. EPA's listing was based on violation of a narrative standard. Arizona's Impaired Water Identification Rule requires adoption of narrative implementation procedures before the state may use narrative information in a listing decision, but once listed the lake cannot be delisted until a TMDL is complete or sufficient data are collected to indicate that mercury in fish tissue is no longer a concern (e.g., fish consumption advisory is removed). ADEQ is currently collecting fish tissue data and investigating potential mercury sources in support of completing a TMDL.	
Lake Mary (upper) 760 acres AZL15020015-0900	A&Wc Inconclusive FC Impaired FBC Inconclusive DWS Inconclusive Agl Inconclusive Category 5 — Impaired Trophic status — Eutrophic	On the Planning List due to: 1. Insufficient monitoring data to assess (only 1 sampling event). 2. Exceedance of the former <u>turbidity</u> standard (1 out of 1 sampling event). Causes and sources of turbidity will be investigated during the next monitoring cycle for this watershed.	EPA placed this reach on the 2002 303(d) List due to the <u>mercury</u> fish consumption advisory issued in 2002. EPA's listing was based on a narrative standard violation. Arizona's Impaired Water Identification Rule requires adoption of narrative implementation procedures before the state may use narrative information in a listing decision, but once listed the surface water cannot be delisted until a TMDL is complete or sufficient data are collected to indicate that mercury in fish tissue is no longer a concern (e.g., fish consumption advisory is removed). ADEQ is currently collecting fish tissue data and investigating potential mercury sources in support of completing a TMDL.	<u>Mercury</u> does not stay in an aqueous state and bioaccumulates rapidly up the food chain. For this assessment, the lab reporting limits were not low enough to assess chronic mercury standards; therefore, the lack of exceedances in the water column does not provide sufficient information about mercury problems in the lake. Recently ADEQ has applied new "clean sampling" techniques that will provide lower detection limits.
Lee Valley Reservoir 38 acres AZL15020001-0770	A&Wc Inconclusive FC Attaining FBC Inconclusive Agl Attaining Agl Attaining Category 2 — Attaining Some Uses Trophic status — Hypereutrophic	On the Planning List due to <u>missing core parameters:</u> <i>Escherichia coli</i> and dissolved metals (cadmium and copper).		
Long Lake (lower) 323 acres AZL15020008-0820	A&Wc Inconclusive FC Impaired FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 5 — Impaired Trophic status not calculated	On the Planning List due to: 1. <u>Missing core parameters:</u> turbidity, <i>Escherichia coli</i> , total boron, total metals (mercury, manganese, copper, and lead), and dissolved metals (copper, cadmium, and zinc). 2. Insufficient <u>seasonal coverage</u> .	<u>Mercury</u> in fish tissue added to the 2004 303(d) List by EPA. Fish consumption advisory issued in 2003.	

TABLE 12. LITTLE COLORADO-SAN JUAN WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Lyman Lake 1308 acres AZL15020001-0850	A&Wc Inconclusive FC Impaired FBC Inconclusive Agl Inconclusive AgL Inconclusive Category 5 — Impaired Trophic status not calculated	On the Planning List due to insufficient water column data to assess (only 1 sample).	Mercury in fish tissue added to the 2004 303(d) List by EPA. Fish consumption advisory issued in 2003.	
McKay Reservoir 12 acres AZL15020001-0007	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive AgL Inconclusive Category 3 — Inconclusive Trophic status not calculated	On the Planning List. No current monitoring data. Added in 2002 due to: 1. Low dissolved oxygen (1 of 1 sample). 2. High pH (1 of 1 sample). 3. Missing core parameters.		
Nelson Reservoir 67 acres AZL15020001-1000	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive AgL Inconclusive Category 3 — Inconclusive Trophic status not calculated	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Rainbow Lake 111 acres AZL15020005-1170	A&Wc Not attaining FC Inconclusive FBC Not attaining Agl Not attaining AgL Not attaining Category 4A — Not attaining Trophic status — Eutrophic	On the Planning List for: 1. TMDL follow-up monitoring (nutrients and pH). 2. Insufficient monitoring.		Nutrient and pH TMDLs were approved by EPA in 2000. Placed on the Planning List in 2002 for follow-up monitoring.
River Reservoir 141 acres AZL15020001-1220	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive AgL Inconclusive Category 3 — Inconclusive Trophic status not calculated	On the Planning List due to missing core parameters: turbidity, <i>Escherichia coli</i> , total boron, total metals (mercury, and lead), and dissolved metals (copper, cadmium, and zinc).		
Soldiers Annex Lake 122 acres AZL15020008-1430	A&Wc Inconclusive FC Impaired FBC Inconclusive Agl Inconclusive AgL Inconclusive Category 5 — Impaired Trophic Status not calculated	On the Planning List due to insufficient water column data (only 1 sample).	Mercury in fish tissue added to the 2004 303(d) List by EPA. Fish consumption advisory issued in 2003.	
Soldiers Lake 28 acres AZL15020008-1440	A&Wc Inconclusive FC Impaired FBC Inconclusive Agl Inconclusive AgL Inconclusive Category 5 — Impaired Trophic Status not calculated	On the Planning List due to insufficient water column data.	Mercury in fish tissue added to the 2004 303(d) List by EPA. Fish consumption advisory issued in 2003.	
Tunnel Reservoir 43 acres AZL15020001-1550	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive AgL Inconclusive Category 3 — Inconclusive Trophic status not calculated	On the Planning List due to: 1. Missing core parameters: <i>Escherichia coli</i> , turbidity, total boron, total metals (mercury, manganese, and lead) and dissolved metals (copper, cadmium, and zinc). 2. Low dissolved oxygen (1 of 3 samples).		

TABLE 12. LITTLE COLORADO-SAN JUAN WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Woods Canyon Lake 70 acres AZL15020010-1700	A&Wc Inconclusive FC Attaining FBC Inconclusive DWS Attaining Agl Attaining Agl Attaining Category 2 — Attaining some uses Trophic status — Eutrophic	On the Planning List due to <u>missing core parameters:</u> <i>Escherichia coli</i> and dissolved metals (cadmium, copper, and zinc).		



The Hassayampa River, a tributary of the Gila River, near Wagoner, Arizona.

The Middle Gila Watershed

This watershed encompasses the Gila River drainage area below Coolidge Dam (San Carlos Reservoir) in the east to Painted Rock Dam in the west. It excludes the Santa Cruz River and San Pedro River drainages and the Salt River drainage above Granite Reef Dam. The Salt River drainage area below Granite Reef Dam is included in this watershed (instead of the Salt Watershed), because the canals and diversions at the dam have hydrologically disconnected the system from the rest of the Salt drainage. This area receives little rainfall; therefore, surface water flow is primarily attributed to releases from upstream impoundments, effluent from wastewater treatment plants, and agricultural return flows.

The Phoenix metropolitan area, located in this 12,250 square mile watershed, consists of more than 3,190,700 people (2000 census). Land ownership is approximately: 25% private land, 4% state land, 65% federal land, and 4% Tribal lands. Within the metropolitan area, irrigated agriculture uses are rapidly being displaced by urbanization. Outside of the urbanized area, livestock grazing is the primary land use. Mining (primarily now abandoned) has occurred across this watershed, with more concentration south of Prescott.

Elevations range from 7,400 feet (above sea level) to 1,100 feet at Painted Rocks Reservoir. Most of the watershed is below 5,000 feet in elevation, with low desert flora and fauna and warmwater aquatic communities where perennial waters exist.

The assessment – Assessments were completed for 54 stream reaches and nine lakes in this watershed. Of the 622 stream miles assessed, 109 miles were attaining all uses (six reaches) and 168 miles (18 reaches) were assessed as impaired or not attaining a use. Of the 2,469 lake acres assessed, 220 acres (one lake) were assessed as attaining all uses and 142 acres (four lakes) were assessed as impaired or not attaining a use. All other reaches and lakes assessed were inconclusive or attaining some uses.

A watershed assessment map follows on the next page, illustrating stream and lake assessments by category. The Middle Gila **monitoring table (Table 13)** following the map summarizes the water quality data used in the assessment. It is followed by the **assessment table (Table 14)**, which bridges current assessments with past assessments and impaired water identification. Important to note in this table are comments regarding previous 303(d) lists (what has been added and removed), category designations (1 through 5), references to potential actions by EPA, and status of TMDLs.

Detailed information on how to use these tables is found at the beginning of this chapter (p. IV-1). Assessment methods and criteria can be found in Chapter III.

Middle Gila Watershed Assessment for Streams & Lakes

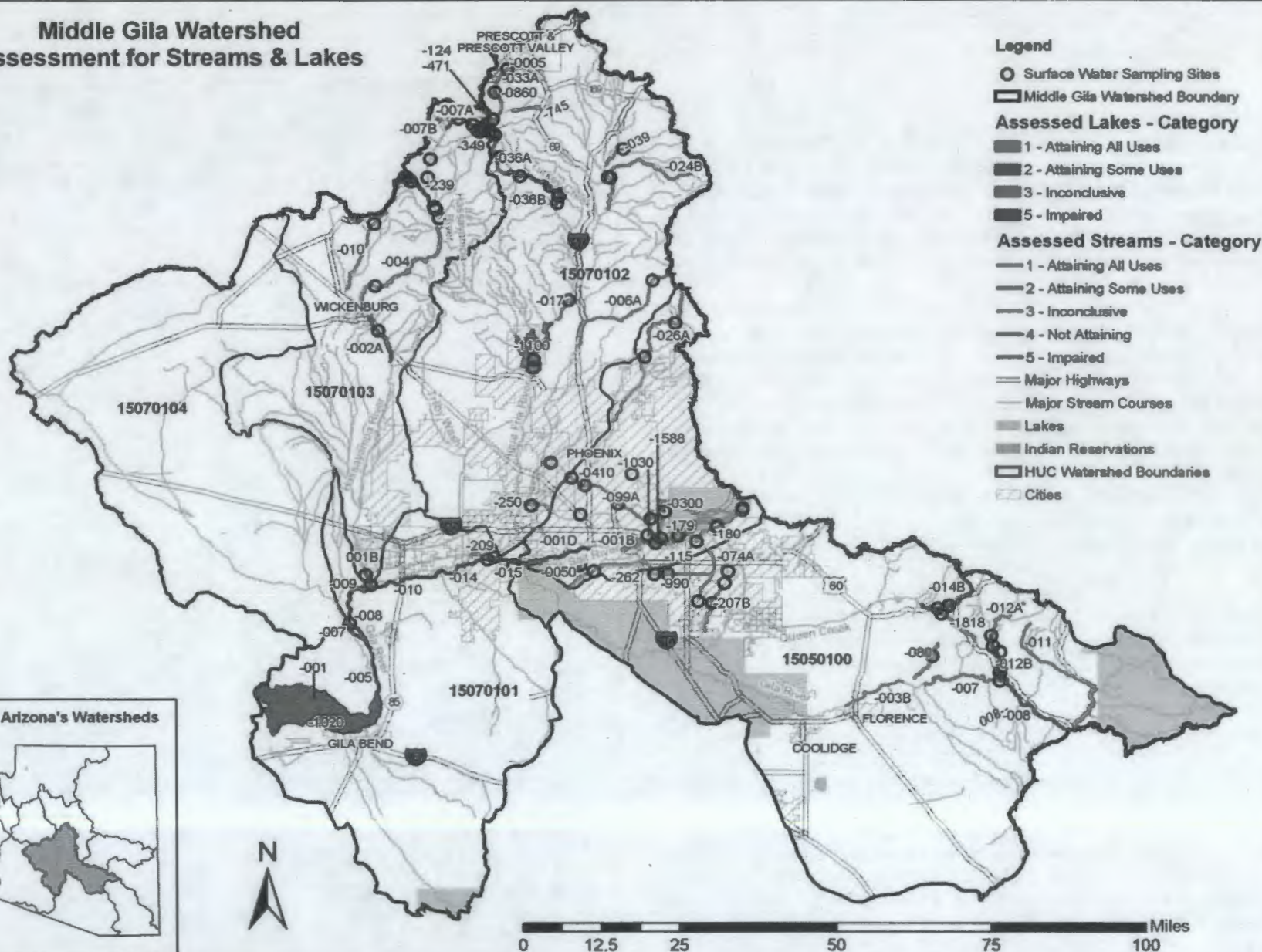


Figure 19. Watershed monitoring and assessments

TABLE 13. MIDDLE GILA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
STREAM MONITORING DATA								
Agua Fria River Sycamore Creek - Big Bug Creek AZ15070102-023 A&Ww, FC, FBC, DWS, Agl, AgL	ADEQ Biocriteria Program Upstream of Big Bug Creek MGAFR064.94 100711	1998 - 1 partial suite	No exceedances					ADEQ collected 5 samples at 2 sites in 1998 - 2002. Assessed as "attaining all uses."
	ADEQ Ambient Monitoring Below USGS gaging station MGAFR064.91 100710	2001 - 1 full suite 2002 - 3 full suites	No exceedances					
	Summary Row A&Ww Attaining FC Attaining FBC Attaining DWS Attaining Agl Attaining Agl Attaining	1998 - 2002 5 sampling events	No exceedances					
Agua Fria River Little Squaw Creek - Cottonwood Creek AZ15070102-017 A&Ww, FC, FBC, DWS, Agl, AgL	ADEQ Ambient Monitoring Below Rock Springs Gage MGAFR043.96 101304	2001 - 1 full suite 2002 - 3 full suites	Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	1.74 - 8.26 (21 - 116%)	2 of 4		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.
	Summary Row A&Ww Attaining FC Attaining FBC Attaining DWS Attaining Agl Attaining Agl Attaining	2001 - 2002 4 sampling events	No exceedances					ADEQ collected 4 samples in 2001 - 2002. Assessed as "attaining all uses."
Antelope Creek headwaters - Martinez Creek AZ15070103-010 A&Ww, FC, FBC, AgL	ADEQ Biocriteria Program Above Road Crossing near Stanton MGANT011.29 100713	1998 - 1 partial suite	No exceedances					Insufficient monitoring data to assess.
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive	1998 1 sampling event	No exceedances					
Arizona Canal Granite Reef Dam - Cholla WTP AZ15060106B-099A DWS, Agl, AgL	SRP Routine Monitoring At Granite Reef Dam MGAZC021.79 SVCA 1-0.0	1998 - 10 partial suites 1999 - 12 partial suites 2000 - 12 partial suites 2001 - 12 partial suites 2002 - 11 partial suites	No exceedances					
	SRP Routine Monitoring At Invergorden (64th Street) MGAZC014.51 SVCA 1-3.9	1998 - 10 partial suites 1999 - 12 partial suites 2000 - 11 partial suites 2001 - 11 partial suites 2002 - 11 partial suites	No exceedances					
	SRP Routine Monitoring At Squaw Peak Water Treatment Plant MGAZC010.48 SVCA 1-8.3	1998 - 10 partial suites 1999 - 12 partial suites 2000 - 11 partial suites 2001 - 11 partial suites 2002 - 11 partial suites	No exceedances					

TABLE 13. MIDDLE GILA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	
	SRP Routine Monitoring At Deer Valley Water Treatment Plant MGAZC005.74 SVCA 1-14.5	1998 - 7 partial suites 1999 - 12 partial suites 2000 - 11 partial suites 2001 - 12 partial suites 2002 - 12 partial suites	No exceedances					
	SRP Routine Monitoring At Cholla Water Treatment Plant MGAZC003.90 SVCA 1-16.6	1998 - 10 partial suites 1999 - 12 partial suites 2000 - 11 partial suites 2001 - 11 partial suites 2002 - 11 partial suites	No exceedances					
	Summary Row DWS Inconclusive AgI Inconclusive AgL Inconclusive	1998 - 2002 286 samples 57 sampling events	No exceedances					SRP collected 286 samples at 5 sites in 1998-2002. Assessed as "Inconclusive" and placed on the Planning List due to missing core parameters: total arsenic, total fluoride, and total metals (chromium, copper, lead, manganese, and mercury).
Arizona Canal Cholla WTP - HUC boundary 15070102 AZ15060106B-099B AgI, AgL	SRP Routine Monitoring At 75 th Ave. and Greenway MGAZC001.48 LT1-20.0	1998 - 10 partial suites 1999 - 12 partial suites 2000 - 11 partial suites 2001 - 11 partial suites 2002 - 11 partial suites	No exceedances					
	Summary Row AgI Inconclusive AgL Inconclusive	1998 - 2002 55 sampling events	No exceedances					SRP collected 55 samples in 1998-2002. Assessed as "Inconclusive" and placed on the Planning List due to missing core parameters: field pH and total metals (copper, lead, and manganese).
Amett Creek headwaters - Queen Creek AZ15050100-1818 A&Ww, FC, FBC (tributary rule)	ADEQ Ambient Monitoring Near town of Superior MGARN001.57 101306	2001 - 1 full suite 2002 - 3 full suites	Dissolved oxygen mg/L	>8.0 (90% saturation) (A&Ww)	3.4 - 9.1 (44 - 104%)	2 of 4		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.
	Summary Row A&Ww Attaining FC Attaining FBC Attaining	2001 - 2002 4 sampling events	No exceedances					ADEQ collected 4 samples in 2001 - 2002. Assessed as "attaining all uses."
Blue John Creek headwaters - Unnamed trib to Lynx Creek AZ15070102-471 A&Wc, FC, FBC (tributary rule)	Weston Solutions for EPA Above unnamed tributary (LC-BSC-JUP) MGBLJ000.05	2001 - 1 metals suite (dissolved only)	Cadmium (dissolved) µg/L	varies by hardness (A&Wc acute)	54.8	1 of 1		Additional samples taken by Weston Solutions showed exceedances but were not used in this assessment. QA/QC protocols were not fulfilled and resulted in estimated values.
				varies by hardness (A&Wc chronic)	54.8	1 of 1		
			Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	81.7	1 of 1		
				varies by hardness (A&Wc chronic)	81.7	1 of 1		
			Zinc (dissolved) µg/L	varies by hardness (A&Wc acute)	5060	1 of 1		
				varies by hardness (A&Wc chronic)	5060	1 of 1		

TABLE 13. MIDDLE GILA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row	2001	Cadmium (dissolved) µg/L	varies by hardness (A&Wc acute)	54.8	1 of 1 event (In 2001)	Inconclusive	Insufficient monitoring data to assess.
	A&Wc Inconclusive FC Inconclusive FBC Inconclusive	1 sampling event		varies by hardness (A&Wc chronic)	54.8	1 of 1 event	Inconclusive	Placed on the Planning List due to cadmium, copper, and zinc exceedance.
			Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	81.7	1 of 1 event (In 2001)	Inconclusive	
				varies by hardness (A&Wc chronic)	81.7	1 of 1 event	Inconclusive	
			Zinc (dissolved) µg/L	varies by hardness (A&Wc acute)	5060	1 of 1 event (In 2001)	Inconclusive	
				varies by hardness (A&Wc chronic)	5060	1 of 1 event	Inconclusive	
Buckeye Canal Gila River - South Extension Canal AZ15070101-209 Agl, AgL	USGS NAWQA Site #09514000 Near Avondale MGBKC000.015 101494	1998 - 4 partial suites						
	Summary Row Agl Inconclusive AgL Inconclusive	1998 4 sampling events	No exceedances					USGS collected 4 samples in 1998. Assessed as "Inconclusive" and placed on the Planning List due to missing core parameters: total boron and total metals (copper, lead, manganese).
Cash Mine Creek headwaters - Hassayampa River AZ15070103-349 A&Wc, FBC, FC (tributary rule)	Weston Solutions for EPA Above unnamed tributary (HR-MCT-BCSD) MGCSM000.24	2001 - 1 metals suite (dissolved only)	Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	2820	1 of 1		Additional samples taken by Weston Solutions showed exceedances but were not used in this assessment. QA/QC protocols were not fulfilled and resulted in estimated values.
				varies by hardness (A&Wc chronic)	2820	1 of 1		
			Copper (total) µg/L	1300 (FBC)	2820	1 of 1		
			Zinc (dissolved) µg/L	varies by hardness (A&Wc acute)	256	1 of 1		
				varies by hardness (A&Wc chronic)	256	1 of 1		

TABLE 13. MIDDLE GILA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	
	Summary Row	2001						
	A&Wc Not attaining	1 sampling event	Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	2820	1 of 1 event (In 2001)	Inconclusive (Not attaining)	Cadmium, copper, pH, and zinc loadings on this reach were addressed in the TMDL for the Hassayampa River approved by EPA in 2002. Although current data for copper and zinc are "inconclusive," the reach is assessed as "not attaining" until data indicate that all uses are being attained for parameters addressed in the TMDL. Placed on the Planning List for TMDL follow-up monitoring and insufficient sampling events.
	FC Inconclusive			varies by hardness (A&Wc chronic)	2820	1 of 1 event	Inconclusive (Not attaining)	
	FBC Not attaining		Copper (total) µg/L	1300 (FBC)	2820	1 of 1 event	Inconclusive (Not attaining)	
			Zinc (dissolved) µg/L	varies by hardness (A&Wc acute)	256	1 of 1 event (In 2001)	Inconclusive (Not attaining)	
				varies by hardness (A&Wc chronic)	256	1 of 1 event	Inconclusive (Not attaining)	
Cash Mine Creek, unnamed tributary of headwaters - Cash Mine Creek AZ15070103-415 A&Wc, FC, FBC (tributary rule)	Weston Solutions for EPA Below edit, Above McClellan tailings MGUCM000.19	2001 - 1 metals suite (total only)	Lead (total) µg/L	15 (FBC)	38.5	1 of 1		Additional samples taken by Weston Solutions showed exceedances but were not used in this assessment. QA/QC protocols were not fulfilled and resulted in estimated values.
	Weston Solutions for EPA At base of McClellan tailings MGUCM000.10	2001 - 1 metals suite (dissolved only)	Cadmium (dissolved) µg/L	varies by hardness (A&Wc acute)	62.3	1 of 1		
				varies by hardness (A&Wc chronic)	62.3	1 of 1		
			Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	1080	1 of 1		
				varies by hardness (A&Wc chronic)	1080	1 of 1		
			Zinc (dissolved) µg/L	varies by hardness (A&Wc acute)	5320	1 of 1		
				varies by hardness (A&Wc chronic)	5320	1 of 1		
	Summary Row	2001						
	A&Wc Not attaining	2 samples	Cadmium (dissolved) µg/L	varies by hardness (A&Wc acute)	62.3	1 of 1 event (In 2001)	Inconclusive (Not attaining)	Cadmium, copper, pH, and zinc loadings on this reach were addressed in the TMDL for the Hassayampa River approved by EPA in 2002. Although current data for copper and zinc are "inconclusive," the reach is assessed as "not attaining" until data indicate that all uses are being attained for parameters addressed in the TMDL. Placed on the Planning List for TMDL follow-up monitoring and insufficient sampling events.
	FC Inconclusive	1 sampling event		varies by hardness (A&Wc chronic)	62.3	1 of 1 event	Inconclusive (Not attaining)	
	FBC Inconclusive		Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	1080	1 of 1 event (In 2001)	Inconclusive (Not attaining)	
				varies by hardness (A&Wc chronic)	1080	1 of 1 event	Inconclusive (Not attaining)	
			Lead (total) µg/L	15 (FBC)	38.5 - 60.6	1 of 1	Inconclusive	
			Zinc (dissolved) µg/L	varies by hardness (A&Wc acute)	5320	1 of 1 event (In 2001)	Inconclusive (Not attaining)	
				varies by hardness (A&Wc chronic)	5320	1 of 1 event	Inconclusive (Not attaining)	

TABLE 13. MIDDLE GILA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
Cave Creek headwaters - Cave Creek Dam AZ15060106B-026A A&Ww, FC, FBC, AgL	ADEQ Ambient Monitoring Near Ashdale Station, Below Seven Springs MGCVE028.41 100527	2001 - 1 full suite 2002 - 3 full suites	No exceedances					
	ADEQ Ambient Monitoring Above Maricopa Mine, Below inactive mine workings MGCVE022.02 101305	2001 - 1 full suite 2002 - 2 full suites	No exceedances					
	Summary Row A&Ww Attaining FC Attaining FBC Attaining AgL Attaining	2001 - 2002 7 samples 5 sampling events	No exceedances					ADEQ collected 5 samples at 2 sites in 1998 - 2002. Assessed as "attaining all uses."
Consolidated Canal 15060106B - above WTP intake AZ15050100-074A DWS, Agl, AgL	SRP Routine Monitoring At Pecos Road (Chandler Water Treatment Plant) MGCNC010.03 SVCA 5-14.0	1998 - 12 partial suites 1999 - 12 partial suites 2000 - 11 partial suites 2001 - 12 partial suites 2002 - 12 partial suites	No exceedances					
	Summary Row DWS Inconclusive Agl Inconclusive AgL Inconclusive	1998 - 2002 59 sampling events	No exceedances					SRP collected 59 samples in 1998 - 2002. Assessed as "Inconclusive" and placed on the Planning List due to missing core parameters: total metals (arsenic, chromium, lead, manganese, and copper).
Eastern Canal WTP below Warner Rd. - terminus AZ15050100-207B Agl, AgL	SRP Routine Monitoring At lateral 14.5 MGESC012.35 SVCA 4-14.2	1998 - 10 partial suites 1999 - 8 partial suites 2000 - 10 partial suites 2001 - 10 partial suites 2002 - 11 partial suites	No exceedances					
	SRP Routine Monitoring At Warner Ave, Tempe MGESC012.13 SVCA 4-11.0	1998 - 12 partial suites 1999 - 11 partial suites 2000 - 10 partial suites 2001 - 11 partial suites 2002 - 12 partial suites	No exceedances					
	SRP Routine Monitoring At Guadalupe (Gilbert Water Treatment Plant) MGESC007.31 SVCA 4-9.0	1998 - 12 partial suites 1999 - 12 partial suites 2000 - 11 partial suites 2001 - 12 partial suites 2002 - 12 partial suites	No exceedances					
	Summary Row Agl Inconclusive AgL Inconclusive	1998 - 2002 164 samples 59 sampling events	No exceedances					SRP collected 164 samples at 3 sites in 1998-2002. Assessed as "Inconclusive" and placed on the Planning List due to missing core parameters: total metals (arsenic, chromium, lead, manganese, and copper).

TABLE 13. MIDDLE GILA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
French Gulch headwaters - Hassayampa River AZ15070103-239 A&Ww, FC, FBC (tributary rule)	Arimetco, Inc. Compliance monitoring Above Zonia Gulch (FGAZG) MGFRG9.84 101619	1998 - 11 metals suites 1999 - 8 metals suites 2000 - 11 field + metals 2001 - 26 field + metals 2002 - 7 field	Arsenic (total) µg/L	50 (FBC)	<40 - 74	1 of 35		
			Copper (total) µg/L	1300 (FBC)	19 - 1600	1 of 36		
			Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	<10 - 300	23 of 36		
				varies by hardness (A&Ww chronic)	<10 - 300	23 of 36		
			Copper (dissolved) µg/L	varies by hardness (A&Ww chronic)	<10 - 300	26 of 36		
			Lead (total) µg/L	15 (FBC)	<2 - 20	1 of 35		
			Mercury (total) µg/L	0.6 (FC)	0.2 - 1.7	1 of 36		
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	<50 - 1100	20 of 36		
				varies by hardness (A&Ww chronic)	<50 - 1100	20 of 36		
	Arimetco, Inc. Compliance monitoring and ADEQ TMDL Program Below Zonia Gulch (FGBZG and FGBZG+85) MGFRG008.17 101620	1998 - 6 field, 10 metals 1999 - 1 field, 8 metals 2000 - 11 field + metals 2001 - 28 field, 7 metals 2002 - 12 field	Arsenic (total) µg/L	50 (FBC)	<5 - 94	1 of 43		
			Cadmium (dissolved) µg/L	varies by hardness (A&Ww chronic)	<1 - 9	3 of 7		
			Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	<10 - 1200	25 of 48		
				varies by hardness (A&Ww chronic)	<10 - 1200	33 of 48		
			Copper (total) µg/L	1300 (FBC)	<10 - 1400	1 of 49		
			Mercury (total) µg/L	0.6 (FC)	<0.2 - 1.1	1 of 42		
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	<50 - 2200	27 of 48		
				varies by hardness (A&Ww chronic)	<50 - 2200	27 of 48		
	Arimetco, Inc. Compliance monitoring and ADEQ TMDL Program Above Placenta Gulch (FGAPG) MGFRG004.96 100649	1998 - 1 field, 2 metals 1999 - 1 field, 2 metals 2000 - 1 field, 3 metals 2001 - 2 metals 2002 - 1 field, metals	Copper (dissolved) µg/L	varies by hardness (A&Ww chronic)	<10 - 33	2 of 10		
			Mercury (total) µg/L	0.6 (FC)	<0.2 - 1.7	1 of 10		

TABLE 13. MIDDLE GILA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
	Arimetco, Inc. Compliance monitoring and ADEQ TMDL Program Below Placerita Gulch (FGBPG) MGFRG004.87 100650	1998 - 2 field, metals 1999 - 1 field, 3 metals 2000 - 1 field, 3 metals 2001 - 1 field, 2 metals 2002 - 1 field, metals	Mercury (total) µg/L	0.6 (FC)	<0.2 - 1.9	1 of 11		
	Summary Row	1998 - 2002 153 samples 69 sampling events	Arsenic (total) µg/L	50 (FBC)	<5 - 94	2 of 101	Attaining	Arimetco collected 146 samples at 4 sites in 1998-2002. ADEQ's TMDL Program collected 7 samples at 3 of these sites in 2001-2002. Assessed as "impaired" due to cadmium, copper and zinc exceedances. Placed on the Planning List due to missing core parameters: dissolved oxygen, <i>Escherichia coli</i> , and turbidity/SSC. (Due to changes in the tributary rule, AgI and AgL uses no longer apply to this reach.)
	A&Ww Impaired FC Attaining FBC Inconclusive		Cadmium (dissolved) µg/L	varies by hardness (A&Ww chronic)	<1 - 9	3 of 7 samples 3 of 7 events	Impaired	
			Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	<10 - 1200	48 of 106 samples 27 of 50 events	Impaired	
				varies by hardness (A&Ww chronic)	<10 - 1200	61 of 106 samples 38 of 50 events	Impaired	
			Copper (total) µg/L	1300 (FBC)	<10 - 1600	2 of 107	Attaining	
			Lead (total) µg/L	15 (FBC)	<2 - 20	1 of 93	Attaining	
			Mercury (total) µg/L	0.6 (FC)	<0.2 - 1.7	4 of 100	Attaining	
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	40 - 2260	47 of 105 samples 29 of 50 events	Impaired	
				varies by hardness (A&Ww chronic)	40 - 2260	47 of 105 samples 29 of 50 events	Impaired	
Gila River San Pedro River - Mineral Creek AZ15050100-008 A&Ww, FC, FBC, AgI, AgL	USGS NAWQA Site #09474000 At Kelvin MGGLR136.90 100748	1998 - 6 partial suites 2001 - 2 full suites 2002 - 4 full suites	Turbidity (former standard) NTU	50 (A&Ww)	1 - 72	2 of 6	Inconclusive	
	Summary Row	1998 - 2002 12 sampling events	Turbidity (former standard) NTU	50 (A&Ww)	1 - 72	2 of 6	Inconclusive (see comment)	USGS collected 12 samples in 1998-2002. Assessed as "attaining some uses" and placed on the Planning List due to exceedances of the former turbidity standard. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.
A&Ww Inconclusive FC Attaining FBC Attaining AgI Attaining AgL Attaining								
Gila River Salt River - Agua Fria River AZ15070101-015 A&Wedw, FC, PBC, AgI, AgL	ADEQ Ambient Monitoring Above El Mirage Road MGGLR095.61 101264	2001 - 1 full suite 2002 - 3 full suites	No exceedances					

TABLE 13. MIDDLE GILA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row A&Wedw Attaining FC Impaired* PBC Attaining Agl Attaining Agl Attaining	2001 - 2002 4 sampling events	No exceedances					*Assessed as "impaired" due to DDT, toxaphene, and chlordane in fish tissue. EPA placed this reach on the 2002 303(d) List because of this pesticide contamination in fish tissue and a fish consumption advisory. Once listed, this reach cannot be delisted until a TMDL is complete or sufficient data are collected to indicate these parameters are no longer a concern in fish tissue (i.e., the fish consumption advisory is removed).
Gila River Agua Fria River - Waterman Wash AZ15070101-014 A&Wedw, FC, PBC, Agl, AgL	USGS NAWQA Site #09514100 At Estrella Parkway MGGLR093.66 101495	1998 - 1 partial suite	No exceedances					
	Summary Row A&Wedw Inconclusive FC Impaired* PBC Inconclusive Agl Inconclusive Agl Inconclusive	1998 1 sampling event	No exceedances					*Assessed as "impaired" due to DDT, toxaphene, and chlordane in fish tissue. EPA placed this reach on the 2002 303(d) List because of this pesticide contamination in fish tissue and a fish consumption advisory. Once listed, this reach cannot be delisted until a TMDL is complete or sufficient data are collected to indicate these parameters are no longer a concern in fish tissue (i.e., the fish consumption advisory is removed).
Gila River Centennial Wash - Gillespie Dam AZ15070101-008 A&Wedw, FC, PBC, Agl, AgL	USGS Station #09518000 Above Gillespie Dam diversion MGGLR075.86 100734	1998 - 6 full suites 1999 - 5 full suites 2000 - 4 full suites 2001 - 4 full suites 2002 - 4 full suites	Boron (total) µg/L	1000 (Agl)	370 - 2700	22 of 23		
			<i>Escherichia coli</i> CFU/100 ml	576 (PBC)	15 - 870	1 of 22		
			Selenium (total) µg/L	2 (A&Wedw chronic)	<1 - 15.5	18 of 23		
			Turbidity (former standard) NTU	50 (A&Wedw)	0.34 - 95	5 of 23		

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STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row	1998 - 2002	Boron (total) µg/L	1000 (Agl)	370 - 2700	22 of 23	Impaired	USGS collected 23 samples in 1998-2002. Assessed as "Impaired" due to: 1. Boron exceedances, 2. Selenium exceedances, 3. DDTs, toxaphene, and chlordane in fish tissue. *EPA placed this reach on the 2002 303(d) List because of this pesticide contamination in fish tissue and a fish consumption advisory. Once listed, this reach cannot be delisted until a TMDL is complete or sufficient data are collected to indicate these parameters are no longer a concern in fish tissue (i.e., the fish consumption advisory is removed). This reach is also on the Planning List due to exceedances of the former turbidity standard. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.
	A&Wedw FC PBC Agl Agl	23 sampling events	<i>Escherichia coli</i> CFU/100 ml	576 (PBC)	15 - 870	1 of 22 events (not in the last 3 years of sampling)	Attaining	
			Selenium (total) µg/L	2 (A&Wedw chronic)	<1 - 15.5	18 of 23 samples 18 of 23 events	Impaired	
			Turbidity (former standard) NTU	50 (A&Wedw)	0.34 - 95	5 of 23	Inconclusive (see comment)	
Grand Canal HUC boundary 15070101 - New River AZ15070102-250 Agl, AgL	SRP Routine Monitoring At 99th Ave, Phoenix SVLT 2-23-0 MGGR000.70	1998 - 10 partial suites 1999 - 12 partial suites 2000 - 11 partial suites 2001 - 11 partial suites 2002 - 11 partial suites	No exceedances					
	Summary Row Agl Inconclusive Agl Inconclusive	1998 - 2002 55 sampling events	No exceedances					SRP collected 55 samples in 1998-2002. Assessed as "Inconclusive" and placed on the Planning List due to missing core parameters: field pH and total metals (copper, lead, and manganese).
Hassayampa River headwaters - Copper Creek AZ15070103-007A A&Wc, FC, FBC, Agl, AgL	ADEQ TMDL Program At headwaters MGHSR112.14 101151	2001 - 1 partial suite	pH SU	6.5 - 9.0 (A&Wc, FBC, AgL)	5.5	1 of 1		Lab reporting limits for 1 dissolved cadmium and copper sample were too high to use results for assessment.
	ADEQ TMDL Program Aspen - Below spring MGHSR111.45 101005	2000 - 1 partial suite 2001 - 3 partial suites	Dissolved oxygen mg/L	>7.0 (90% saturation) (A&Wc)	6.5 - 9.7 (65 - 97%)	1 of 3		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.
			pH SU	6.5 - 9.0 (A&Wc, FBC, AgL)	5.3 - 6.3	3 of 4		Lab reporting limits for 4 dissolved cadmium and copper samples were too high to use results for assessment.
	ADEQ TMDL Program McKinley Millsite - at Babble MGHSR110.65 100942	2000 - 2 partial suites 2001 - 6 partial suites	Cadmium (dissolved) µg/L	varies by hardness (A&Wc chronic)	<4 - 5	1 of 2		Lab reporting limits for 6 other dissolved cadmium samples were too high to use results for assessment.
			Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	25 - 90	8 of 8		

TABLE 13. MIDDLE GILA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
				varies by hardness (A&Wc chronic)	25 - 90	8 of 8		
			pH SU	6.5 - 9.0 (A&Wc, FBC, AgL)	5.8 - 7.1	1 of 8		
			Zinc (dissolved) µg/l	varies by hardness (A&Wc acute)	40 - 560	8 of 8		
				varies by hardness (A&Wc chronic)	40 - 560	8 of 8		
	ADEQ TMDL Program Above McClellan tributary MGHSR109.98 101067	2000 - 1 partial suite 2001 - 6 partial suites	Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	<10 - 27	3 of 4		Lab reporting limits for 3 other copper samples were too high to use results for assessment.
				varies by hardness (A&Wc chronic)	<10 - 27	3 of 4		
	ADEQ TMDL Program At McClellan tributary MGHSR109.96 101066	2000 - 1 partial suite 2001 - 6 partial suites	Cadmium (dissolved) µg/L	varies by hardness (A&Wc acute)	20 - 37	7 of 7		Lab reporting limits for 6 other cadmium samples were too high to use results for assessment.
				varies by hardness (A&Wc chronic)	20 - 37	7 of 7		
			Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	1400 - 4077	7 of 7		
				varies by hardness (A&Wc chronic)	1400 - 4077	7 of 7		
			Copper (total) µg/L	500 (AgL)	1530 - 2832	6 of 6		
				1300 (FBC)	1530 - 2832	6 of 6		
			pH SU	6.5 - 9.0 (A&Wc, FBC, AgL)	3.4 - 4.1	6 of 6		
				4.5 - 9.0 (AgL)	3.4 - 4.1	6 of 6		
			Zinc (dissolved) µg/L	varies by hardness (A&Wc acute)	1020 - 3070	7 of 7		
				varies by hardness (A&Wc chronic)	1020 - 3070	7 of 7		
	ADEQ TMDL Program Below McClellan tributary MGHSR109.95 101065	2000 - 1 partial suite 2001 - 5 partial suites	Cadmium (dissolved) µg/L	varies by hardness (A&Wc acute)	<5 - 11	2 of 3		Lab reporting limits for 4 other cadmium samples were too high to use results for assessment.
				varies by hardness (A&Wc chronic)	<5 - 11	2 of 2		
			Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	146 - 575	6 of 6		
				varies by hardness (A&Wc chronic)	146 - 575	6 of 6		

TABLE 13. MIDDLE GILA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
			Copper (total) µg/L	500 (AgL)	334 - 976	1 of 4		
			pH SU	6.5 - 9.0 (A&Wc, FBC, AgL)	5.4 - 6.8	3 of 6		
			Zinc (dissolved) µg/L	varies by hardness (A&Wc acute)	390 - 870	6 of 6		
				varies by hardness (A&Wc chronic)	390 - 870	6 of 6		
	ADEQ TMDL Program and Weston Solutions for EPA Above Senator mine MGHSR109.78 101037	2000 - 1 partial suite 2001 - 6 partial suites	Cadmium (dissolved) µg/L	varies by hardness (A&Wc acute)	<4 - 19	3 of 5		Lab reporting limits for some dissolved cadmium samples were too high to use results for assessment. Additional samples taken by Weston Solutions showed exceedances but were not used in this assessment. QA/QC protocols were not fulfilled and resulted in estimated values.
				varies by hardness (A&Wc chronic)	<4 - 19	2 of 3		
			Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	30 - 1300	7 of 7		
				varies by hardness (A&Wc chronic)	30 - 1300	7 of 7		
			Copper (total) µg/L	500 (AgL)	118 - 1620	2 of 5		
			pH SU	6.5 - 9.0 (A&Wc, FBC, AgL)	6.0 - 6.9	2 of 5		
			Zinc (dissolved) µg/L	varies by hardness (A&Wc acute)	70 - 1030	7 of 7		
				varies by hardness (A&Wc chronic)	70 - 1030	7 of 7		
	ADEQ TMDL Program and Weston Solutions for EPA At Senator mine MGHSR109.75 101084	2001 - 6 partial suites	Cadmium (dissolved) µg/L	varies by hardness (A&Wc acute)	22.9 - 161	6 of 6		Lab reporting limits for some dissolved cadmium samples were too high to use results for assessment. Additional samples taken by Weston Solutions showed exceedances but were not used in this assessment. QA/QC protocols were not fulfilled and resulted in estimated values.
				varies by hardness (A&Wc chronic)	22.9 - 161	6 of 6		
			Cadmium (total) µg/L	50 (AgI, AgL)	33 - 157	1 of 5		
				84 (FC)	33 - 157	1 of 5		
			Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	<10 - 73.1	1 of 5		
				varies by hardness (A&Wc chronic)	<10 - 73.1	2 of 5		
			Zinc (dissolved) µg/L	varies by hardness (A&Wc acute)	2040 - 13,000	6 of 6		
				varies by hardness (A&Wc chronic)	2040 - 13,000	6 of 6		

TABLE 13. MIDDLE GILA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
	ADEQ TMDL Program and Weston Solutions for EPA Downstream of Senator Mine MGHSR109.68 101036	2000 - 2 partial suites 2001 - 1 partial suite	Zinc (total) µg/L	10,000 (Agl)	3350 - 15,300	1 of 5		Additional samples taken by Weston Solutions showed exceedances but were not used in this assessment. QA/QC protocols were not fulfilled and resulted in estimated values.
			Cadmium (dissolved) µg/L	varies by hardness (A&Wc acute)	8 - 34	5 of 6		
				varies by hardness (A&Wc chronic)	8 - 34	6 of 6		
			Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	12 - 348	4 of 6		
				varies by hardness (A&Wc chronic)	12 - 348	6 of 6		
			Zinc (dissolved) µg/L	varies by hardness (A&Wc acute)	720 - 3450	6 of 6		
				varies by hardness (A&Wc chronic)	720 - 3450	6 of 6		
	ADEQ TMDL Program At Whispering Pines MGHSR108.17 100941	2000 - 2 partial suites 2001 - 5 partial suites	Dissolved oxygen mg/L	>7.0 (90% saturation) (A&Wc)	5.1 - 10.8 64 - 105%	1 of 5		Lab reporting limit for dissolved cadmium were too high on 1 sample to use results for assessment. Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.
			Cadmium (dissolved) µg/L	varies by hardness (A&Wc acute)	<5 - 7	2 of 7		
				varies by hardness (A&Wc chronic)	<5 - 7	6 of 6		
			Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	<10 - 207	4 of 7		
				varies by hardness (A&Wc chronic)	<10 - 207	5 of 7		
			Zinc (dissolved) µg/L	varies by hardness (A&Wc acute)	330 - 680	7 of 7		
				varies by hardness (A&Wc chronic)	330 - 680	7 of 7		
	ADEQ TMDL Program At Jersey MGHSR105.37 101195	2001 - 1 partial suite	No exceedances					Lab reporting limits for dissolved cadmium were too high to use results for assessment.

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			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row	2000 - 2001	Cadmium (dissolved) µg/L	varies by hardness (A&Wc acute)	<4 - 161	26 of 39 samples 8 of 10 events (In 2000-2001)	Not attaining	<p>ADEQ collected 57 samples at 11 sites in 2000 - 2001. TMDLs for cadmium, copper, pH, and zinc were approved by EPA in 2002.</p> <p>Assessed as "not attaining" due to cadmium, copper, pH, and zinc exceedances. Although current cadmium data are inconclusive, reach will remain "not attaining" for all parameters addressed in the TMDL until data indicate designated uses are being attained.</p> <p>Placed on the Planning List for TMDL follow up monitoring and missing core parameters: <i>Escherichia coli</i>, turbidity/SSC, total boron, and total metals (mercury, manganese, copper, and lead).</p>
	A&Wc Not attaining FC Not attaining FBC Not attaining Agl Not attaining AgL Not attaining	57 samples 10 sampling events		varies by hardness (A&Wc chronic)	<4 - 161	30 of 32 samples 10 of 10 events	Not attaining	
			Cadmium (total) µg/L	50 (Agl, AgL)	33 - 157	1 of 5	Inconclusive (Not attaining)	
				84 (FC)	33 - 157	1 of 5	Inconclusive (Not attaining)	
			Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	<10 - 1300	38 of 50 samples 9 of 10 events (In 2000-2001)	Not attaining	
				varies by hardness (A&Wc chronic)	<10 - 2300	41 of 49 samples 9 of 10 events	Not attaining	
			Copper (total) µg/L	1300 (FBC)	116 - 2832	6 of 48	Attaining	
				500 (Agl)	116 - 2832	9 of 48	Not attaining	
			pH SU	6.5 - 9.0 (A&Wc, FBC, AgL)	5.3 - 8.36	16 of 52	Not attaining	
			Zinc (dissolved) µg/L	varies by hardness (A&Wc acute)	<20 - 13,000	46 of 59 samples 10 of 10 events (In 2000-2001)	Not attaining	
				varies by hardness (A&Wc chronic)	<20 - 13,000	46 of 59 samples 10 of 10 events	Not attaining	
Hassayampa River Copper Creek - Blind Indian Creek AZ15070103-007B A&Ww, FC, FBC, Agl, AgL	ADEQ TMDL Program Intermittent Site MGHSR93.19 101193	2001 - 1 partial suite	No exceedances					
	ADEQ TMDL Program At gaging station MGHSR089.37 100940	2000 - 2 field 2001 - 4 partial suites	No exceedances					Lab reporting limits for dissolved cadmium were too high to use results for assessment.
	ADEQ TMDL Program Below French Gulch at confluence with Milk Creek MGHSR83.47 101128	2001 - 4 partial suites	No exceedances					Lab reporting limits for dissolved cadmium were too high to use results for assessment.
	ADEQ Fixed Station Network Near Wagoner, Below Milk Creek MGHSR063.02 100464	1999 - 4 full suites 2000 - 3 full suites 2001 - 4 full suites 2002 - 4 full suites	Arsenic (total) µg/L	50 (FBC)	<10 - 67	1 of 15		<p>Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.</p> <p>All exceedances except <i>Escherichia coli</i> and dissolved oxygen occurred following monsoon rains.</p>
			Chromium (total) µg/L	100 (FBC)	<10 - 170	1 of 15		
			Copper (total) µg/L	500 (Agl)	<10 - 1100	1 of 15		

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			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
			Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	2.6 - 10.7 (30 - 128%)	3 of 15		
			<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	<2 - 530	1 of 12		
			Lead (total) µg/L	100 (AgL)	<5 - 150	1 of 15		
				15 (FBC)	<5 - 150	1 of 15		
			Turbidity (former standard) NTU	50 (A&Ww)	0.58 - >1000	1 of 13		
	ADEQ TMDL Program At Blind Indian Creek MGHSR081.07 101003	2000 - 1 field, cadmium, copper, zinc 2001 - 4 field, cadmium, copper, zinc	Cadmium (dissolved) µg/L	varies by hardness (A&Ww chronic)	<1 - 7.0	1 of 5		Lab reporting limits for 4 other dissolved cadmium samples were too high to use results for assessment.
	Summary Row	1999 - 2002	Arsenic (total) µg/L	50 (FBC)	<10 - 67	1 of 15	Attaining	ADEQ collected 30 samples at 5 sites in 1999 - 2002. Assessed as "attaining some uses" and placed on the Planning List due to cadmium and <i>Escherichia coli</i> exceedances.
	A&Ww Inconclusive	30 samples 27 sampling events	Cadmium (dissolved) µg/L	varies by hardness (A&Ww chronic)	<1 - 7.0	1 of 16 samples 1 of 16 events	Inconclusive	
	FC Attaining		Chromium (total) µg/L	100 (FBC)	<10 - 170	1 of 15	Attaining	
	FBC Inconclusive		Copper (total) µg/L	500 (AgL)	<10 - 1100	1 of 15	Attaining	
	AgL Attaining		<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	<2 - 530	1 of 12 samples 1 of 12 events (in 2001)	Inconclusive	
			Lead (total) µg/L	100 (AgL)	<5 - 150	1 of 15	Attaining	
				15 (FBC)	<5 - 150	1 of 15	Attaining	
			Turbidity (former standard) NTU	50 (A&Ww)	0.58 - >1000	1 of 13	Attaining	
Hassayampa River Cottonwood Creek - Martinez Wash AZ15070103-004 A&Ww, FC, FBC, AgL, AgL	ADEQ and USGS Ambient Monitoring At Box Canyon Dam MGHSR049.89 100463	1999 - 4 full suites 2000 - 4 full suites 2001 - 4 full suites 2002 - 4 full suites	Arsenic (total) µg/L	50 (FBC)	<10 - 53	1 of 15		
			Chromium (total) µg/L	100 (FBC)	<10 - 200	1 of 15		
			Copper (total) µg/L	500 (AgL)	<10 - 610	1 of 15		
			<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	2 - 11,400	1 of 14		

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			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
			Lead (total) µg/L	100 (AgL)	<5 - 100	1 of 15		
				15 (FBC)	<5 - 100	1 of 15		
			Turbidity (former standard) NTU	50 (A&Ww)	0.8 - >1000	2 of 15		
	Summary Row A&Ww Attaining FC Attaining FBC Attaining Agl Attaining AgL Attaining	1999 - 2002 16 sampling events	Arsenic (total) µg/L	50 (FBC)	<10 - 53	1 of 15	Attaining	ADEQ and USGS collected 16 samples in 1999-2002. Assessed as "attaining all uses."
			Chromium (total) µg/L	100 (FBC)	<10 - 200	1 of 15	Attaining	
			Copper (total) µg/L	500 (AgL)	<10 - 610	1 of 15	Attaining	
			<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	2 - 11,400	1 of 14 (Not in the last 3 years of sampling)	Attaining	
			Lead (total) µg/L	100 (AgL)	<5 - 100	1 of 15	Attaining	
				15 (FBC)	<5 - 100	1 of 15	Attaining	
			Turbidity (former standard) NTU	50 (A&Ww)	0.8 - >1000	2 of 15	Attaining	
Hassayampa River Sole Wash - 8 miles below Wickenburg AZ15070103-002A A&Ww, FC, FBC, AgL, Agl	ADEQ Ambient Monitoring At Nature Conservancy near Wickenburg MGHSR042.26 100462	2001 - 1 full suite 2002 - 2 full suites	Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	2.94 - 3.38	3 of 3		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.
			<i>Escherichia coli</i> CFU/100 mL	235 (FBC)	4 - 590	1 of 3		
	Summary Row A&Ww Attaining FC Attaining FBC Inconclusive Agl Attaining AgL Attaining	2001 - 2002 3 sampling events	<i>Escherichia coli</i> CFU/100 mL	235 (FBC)	4 - 590	1 of 3 events (In 2002)	Inconclusive	ADEQ collected 3 samples in 2001-2002. Assessed as "attaining some uses" and placed on the Planning List due to <i>Escherichia coli</i> exceedance.
Hassayampa River Buckeye Canal - Gila River AZ15070103-001B A&Ww, FC, FBC, AgL	USGS NAWQA Site #09517000 Near Arlington MGHSR001.56	1998 - 4 partial suites	DDE µg/L	0.001 (FC, AgL)	0.003 - 0.010	2 of 4		2 other samples exceeded the DDE standard, but the values were estimated and could not be used for assessment.
	ADEQ Ambient Monitoring Above Gila River MGHSR000.23 101197	2001 - 1 full suite 2002 - 3 full suites	Turbidity (former standard) NTU	50 (A&Ww)	18.1 - 110	1 of 4		

TABLE 13. MIDDLE GILA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row	1998 - 2002	DDE (a DDT metabolite) µg/L	0.001 (FC, AgL)	0.003 - 0.010	2 of 4	Inconclusive (Impaired)	ADEQ and USGS collected 8 samples in 1998 - 2002.
	A&Ww FC FBC AgL	Inconclusive Impaired* Attaining Inconclusive	8 sampling events					"Assessed as "Impaired" due to DDT, toxaphene, and chlordane in fish tissue. EPA placed this reach on the 2002 303(d) List because of pesticide contamination in fish tissue and a fish consumption advisory. Once listed, this reach cannot be delisted until a TMDL is complete or sufficient data are collected to indicate these parameters are no longer a concern in fish tissue (i.e., the fish consumption advisory is removed). Also on the Planning List due to exceedance of the former turbidity standard. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.
			Turbidity (former standard) NTU	50 (A&Ww)	18.1 - 110	1 of 4	Inconclusive (see comment)	
Hassayampa River, unnamed tributary of headwaters - Hassayampa River AZ15070103-417 A&Wc, FC, FBC (tributary rule)	Weston Solutions for EPA Background sample MGUHS000.12	2001 - 1 dissolved metals suite	Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	27.7	1 of 1		Additional samples taken by Weston Solutions showed exceedances but were not used in this assessment. QA/QC protocols were not fulfilled and resulted in estimated values.
				varies by hardness (A&Wc chronic)	27.7	1 of 1		
	Summary Row	2001	Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	27.7	1 of 1 event (in 2001)	Inconclusive	Insufficient monitoring data to assess.
	A&Wc FC FBC	Inconclusive Inconclusive Inconclusive	1 sampling event	varies by hardness (A&Wc chronic)	27.7	1 of 1 event	Inconclusive	Placed on the Planning List due to copper exceedance.
Indian Bend Wash headwaters - Salt River AZ15060106B-179 A&We, PBC	USGS At 40 th Street MGIBW001.43 101520	2001 - 1 field, metals 2002 - 2 field, metals	Lead (total) µg/L	15 (PBC)	10 - 38	1 of 3		
	USGS At Curry Road MGIBW000.23 101492	1998 - 3 partial suites	No exceedances					
	Summary Row	1998 - 2002	Lead (total) µg/L	15 (PBC)	10 - 38	1 of 3	Inconclusive	USGS collected 6 samples at 2 sites in 1998-2002. Assessed as "inconclusive" and placed on the Planning List due to lead exceedance and missing core parameters: dissolved metals (cadmium, copper, zinc).
	A&We PBC	Inconclusive Inconclusive	6 sampling events					

TABLE 13. MIDDLE GILA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
Little Ash Creek headwaters - Ash Creek AZ15070102-039 A&Ww, FC, FBC, AgL	ADEQ Ambient Monitoring Near Estler Peak MGLAS003.16 100578	1998 - 1 partial suite 2002 - 1 full suite	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	1998 - 2002 2 sampling events	No exceedances					Insufficient monitoring data to assess.
Lynx Creek, <u>unnamed tributary of</u> headwaters - Lynx Creek AZ15070102-124 A&Wc, FC, FBC (tributary rule)	Weston Solutions for EPA Above Blue John Creek MGULN000.13	2001 - 1 dissolved metals suite	Cadmium (dissolved) µg/L	varies by hardness (A&Wc acute)	42.2	1 of 1		Additional samples taken by Weston Solutions showed exceedances but were not used in this assessment. QA/QC protocols were not fulfilled and resulted in estimated values.
				varies by hardness (A&Wc chronic)	42.2	1 of 1		
			Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	1090	1 of 1		
				varies by hardness (A&Wc chronic)	1090	1 of 1		
			Zinc (dissolved) µg/L	varies by hardness (A&Wc acute)	3010	1 of 1		
				varies by hardness (A&Wc chronic)	3010	1 of 1		
	Weston Solutions for EPA At Blue John Creek MGULN000.11	2001 - 1 dissolved metals suite	Cadmium (dissolved) µg/L	varies by hardness (A&Wc acute)	40.7	1 of 1		
				varies by hardness (A&Wc chronic)	40.7	1 of 1		
			Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	826	1 of 1		
				varies by hardness (A&Wc chronic)	826	1 of 1		
			Zinc (dissolved) µg/L	varies by hardness (A&Wc acute)	2820	1 of 1		
				varies by hardness (A&Wc chronic)	2820	1 of 1		
	Weston Solutions for EPA Below Blue John Creek MGULN000.07	2001 - 1 dissolved metals suite	Cadmium (dissolved) µg/L	varies by hardness (A&Wc acute)	39	1 of 1		
				varies by hardness (A&Wc chronic)	39	1 of 1		
			Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	585	1 of 1		
				varies by hardness (A&Wc chronic)	585	1 of 1		

TABLE 13. MIDDLE GILA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive	2001 3 samples 1 sampling event	Zinc (dissolved) µg/L	varies by hardness (A&Wc acute)	2630	1 of 1		Insufficient monitoring data to assess. Placed on the Planning List due to cadmium, copper, and zinc exceedances.
				varies by hardness (A&Wc chronic)	2630	1 of 1		
			Cadmium (dissolved) µg/L	varies by hardness (A&Wc acute)	39 - 42.2	3 of 3 samples 1 of 1 event (In 2001)	Inconclusive	
				varies by hardness (A&Wc chronic)	39 - 42.2	3 of 3 samples 1 of 1 event	Inconclusive	
			Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	585 - 1090	3 of 3 samples 1 of 1 event (In 2001)	Inconclusive	
				varies by hardness (A&Wc chronic)	585 - 1090	3 of 3 samples 1 of 1 event	Inconclusive	
			Zinc (dissolved) µg/L	varies by hardness (A&Wc acute)	2630 - 3010	3 of 3 samples 1 of 1 event (In 2001)	Inconclusive	
				varies by hardness (A&Wc chronic)	2630 - 3010	3 of 3 samples 1 of 1 event	Inconclusive	
Martinez Canyon headwaters - Box Canyon AZ15050100-080 A&Ww, FC, FBC, AgL	ADEQ Ambient Monitoring MGMZC004.21 101349	2002 - 1 full suite	Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	3.07	1 of 1		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	2002 1 sampling event	No exceedances					Assessed as "Inconclusive" and placed on the Planning List due to insufficient monitoring events.
Mineral Creek Devils Canyon - Gila River AZ15050100-012B A&Ww, FC, FBC, AgL	ASARCO Consent Decree Monitoring At Indian Gardens (Above mine) (Site IG) MGMIN007.55	1998 - 12 partial suites 1999 - 12 partial suites 2000 - 11 partial suites 2001 - 6 partial suites	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	<20 - 24	1 of 41		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.
				varies by hardness (A&Ww chronic)	<20 - 24	2 of 41		
			Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	3.5 - 15.2	10 of 41		
			Lead (total) µg/L	15 (FBC)	<2 - 54	1 of 41		
			Selenium (total) µg/L	2.0 (A&Ww chronic)	<2 - 3.5	1 of 41		
			Turbidity (former standard) NTU	50 (A&Ww)	0.5 - 960	7 of 41		

TABLE 13. MIDDLE GILA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
	ASARCO Consent Decree Monitoring Mineral Creek Diversion Tunnel Inlet (Site MCTI) MGMIN005.77	2001 - 12 partial suites 2002 - 8 partial suites	Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	2.8 - 7.3	15 of 22		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment. Sampling ended at this site in September, 2002. Water was diverted from the area after new tunnel extension. Additional samples taken 1998 - 2000. See comment in summary row.
			Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	<10 - 21	1 of 20		
				varies by hardness (A&Ww chronic)	<10 - 21	1 of 20		
	ASARCO Consent Decree Monitoring Mineral Creek Diversion Tunnel Outlet (Site MCTO) MGMIN004.74	2001 - 11 partial suites 2002 - 11 partial suites	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	<10 - 25	1 of 22		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment. Additional samples taken 1998 - 2000. See comment in summary row.
				varies by hardness (A&Ww chronic)	<10 - 25	2 of 22		
			Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	4.4 - 9.4	2 of 21		
			Selenium (total) µg/L	2.0 (A&Ww chronic)	<2.0 - 8.7	17 of 22		
	ASARCO Consent Decree Monitoring Channel Outlet (Site Surf 8w) MGMIN002.21	2001 - 8 partial suites 2002 - 11 partial suites	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	<10 - 27	1 of 19		Additional samples taken 1998 - 2000. See comment in summary row.
				varies by hardness (A&Ww chronic)	<10 - 27	1 of 19		
			Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	4.37 - 11.28	2 of 18		
			Selenium µg/L	2.0 (A&Ww chronic)	<2.0 - 8.4	16 of 19		
	ASARCO Consent Decree Monitoring Below highway bridge 177 (Site Min-1) MGMIN001.35	2002 - 1 partial suite	Copper µg/L	varies by hardness (A&Ww acute)	<10 - 32	1 of 19		
				varies by hardness (A&Ww chronic)	<10 - 32	1 of 19		
			Selenium µg/L	2.0 (A&Ww chronic)	<2.0 - 3.1	1 of 7		

TABLE 13. MIDDLE GILA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row	1998 - 2002	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	<20 - 24	1 of 41 events (In 2001)	Inconclusive (Impaired)	<p>ASARCO collected 103 samples in 2001 - 2002. Assessed as "Impaired" due to copper and selenium exceedances.</p> <p>ASARCO began diverting water in 2001. Prior to diversion, exceedances occurred for cadmium, copper, lead, nickel, pH, turbidity, and zinc, in addition to selenium. Water quality significantly improved beginning in January 2001, except for copper, selenium and turbidity. Therefore, exceedances before the water diversion were not included in the assessment statistics.</p> <p>On the Planning List due to:</p> <ol style="list-style-type: none"> Former turbidity standard exceedances. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring. Missing core parameters: <i>Escherichia coli</i> and total mercury.
	A&Ww Impaired FC Inconclusive FBC Inconclusive AgL Attaining	103 samples 41 sampling events		varies by hardness (A&Ww chronic)	<20 - 24	2 of 41 events	Impaired	
			Lead (total) µg/L	15 (FBC)	<2 - 54	1 of 103	Attaining	
			Selenium (total) µg/L	2.0 (A&Ww chronic)	<2 - 3.5	19 of 41 events	Impaired	
			Turbidity (former standard) NTU	50 (A&Ww)	0.5 - 960	7 of 103 7 of 41 above treatment	Inconclusive (see comment)	
New River headwaters - Interstate 17 AZ15070102-006A A&Ww, FC, FBC, AgL, AgL	ADEQ Biocriteria Program Above Burnt Hole Canyon MGNWR040.70 100604	1998 - 1 partial suite	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive AgL Inconclusive	1998 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Queen Creek headwaters - Superior Mine WWTP AZ15050100-014A A&We, PBC, AgL	BHP Copper Consent Decree Monitoring Above mine discharge AMP1	1998 - 3 field, metals 2000 - 1 field, metals 2001 - 4 field, metals	Copper (dissolved) µg/L	varies by hardness (A&We)	<20 - 30	1 of 8		
	Summary Row A&We Impaired PBC Attaining AgL Inconclusive	1998 - 2001 8 sampling events	Copper (dissolved) µg/L	varies by hardness (A&We)	<20 - 30	1 of 8 events (In 2000)	Inconclusive (Impaired)	<p>BHP collected 8 samples in 1998-2001. Assessed as "Impaired" in 2002 due to copper exceedances.</p> <p>Reach was on 2002 303(d) List for copper. Although current copper data are inconclusive, the reach will remain "Impaired" until a TMDL is complete or copper data indicate designated uses are being attained.</p> <p>ADEQ investigation indicates that the reach may be intermittent rather than ephemeral, and therefore, more stringent water quality standards should be adopted for this reach.</p> <p>Also placed on the Planning List due to missing core parameters: dissolved cadmium and total lead.</p>

TABLE 13. MIDDLE GILA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
Queen Creek Superior Mine WWTP - Potts Canyon AZ15050100-014B A&Wedw, PBC	BHP Copper Consent Decree Monitoring Below mine discharge AMP2	1998 - 3 partial suites 2000 - 1 partial suites 2001 - 4 partial suites	Copper (dissolved) µg/L	varies by hardness (A&Wedw acute)	<20 - 30	1 of 8		
				varies by hardness (A&Wedw chronic)	<20 - 30	1 of 8		
	ADEQ Ambient Monitoring Above Boyce-Thompson Arboretum MGQEN028.97 100624	2002 - 1 full suite	Copper (dissolved) µg/L	varies by hardness (A&Wedw acute)	50	1 of 1		
				varies by hardness (A&Wedw chronic)	50	1 of 1		
			Selenium (total) µg/L	2.0 (A&Wedw chronic)	5.8	1 of 1		
	Summary Row A&Wedw Impaired PBC Inconclusive	1998 - 2002 9 sampling events	Copper (dissolved) µg/L	varies by hardness (A&Wedw acute)	<20 - 50	2 of 9 samples 2 of 8 events (In 2000 and 2002)	Impaired	BHP and ADEQ collected 9 samples in 1998-2002. Assessed as "Impaired" due to copper exceedances.
				varies by hardness (A&Wedw chronic)	<20 - 50	2 of 9 samples 2 of 9 events	Impaired	Placed on the Planning List due to selenium exceedance and missing core parameters: dissolved cadmium and <i>Escherichia coli</i> .
			Selenium (total) µg/L	varies by hardness (A&Wedw chronic)	5.8	1 of 1 sample 1 of 1 event	Inconclusive	
Salt River 2 km below Granite Reef dam - Interstate 10 bridge AZ15060106B-001B A&We, PBC	USGS At Priest Drive near Phoenix MGSLR013.74 101493	1998 - 1 partial suite	No exceedances					
	Summary Row A&We Inconclusive PBC Inconclusive	1998 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Salt River 23rd Ave WWTP - Gila River AZ15060106B-001D A&Wedw, FC, PBC, Agl, AgL	USGS NAWQA Site #09512407 Below Tres Rios discharge MGSLR001.88 101265	2001 - 1 full suite 2002 - 3 full suites	No exceedances					
	Summary Row A&Wedw Attaining FC Impaired PBC Attaining Agl Attaining AgL Attaining	2001 - 2002 4 sampling events	No exceedances					USGS collected 4 samples in 2001- 2002. *Assessed as "Impaired" due to DDT, toxaphene, and chlordane in fish tissue. EPA placed this reach on the 2002 303(d) List because of this pesticide contamination in fish tissue and a fish consumption advisory. Once listed, this reach cannot be delisted until a TMDL is complete or sufficient data are collected to indicate these parameters are no longer a concern in fish tissue (i.e., fish consumption advisory is removed).

TABLE 13. MIDDLE GILA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
South Canal Granite Reef Dam - Consolidated Canal AZ15060106B-180 DWS, Agl, AgL	SRP Routine Monitoring At division gates MGSOC006.83 SVCA 3-3.3	1998 - 10 partial suites 1999 - 11 partial suites 2000 - 11 partial suites 2001 - 12 partial suites 2002 - 11 partial suites	No exceedances					
	SRP Routine Monitoring At Val Vista Water Treatment Plant SVCA 3-1.4	1998 - 11 partial suites 1999 - 12 partial suites 2000 - 11 partial suites 2001 - 12 partial suites 2002 - 12 partial suites	No exceedances					
	SRP Routine Monitoring At Granite Reef Dam MGSOC000.05 SVCA 3-0.0	1998 - 11 partial suites 1999 - 12 partial suites 2000 - 11 partial suites 2001 - 12 partial suites 2002 - 12 partial suites	No exceedances					
	Summary Row DWS Inconclusive Agl Inconclusive AgL Inconclusive	1998 - 2002 171 samples 58 sampling events	No exceedances					SRP collected 171 samples at 3 sites in 1998-2002. Assessed as "inconclusive" and placed on the Planning List due to missing core parameters: total metals (arsenic, chromium, lead, manganese, and copper).
Sycamore Creek Tank Canyon-Agua Fria River AZ15070102-024B A&Ww, FC, FBC, AgL	ADEQ Ambient Monitoring Near Dugas Above ranger station MGSYD004.90 100704	1998 - 1 partial suite 2001 - 1 partial suite 2002 - 4 full suites	No exceedances					
	Summary Row A&Ww Attaining FC Attaining FBC Attaining AgL Attaining	1998 - 2002 6 sampling events	No exceedances					ADEQ collected 6 samples in 1998-2002. Assessed as "attaining all uses."
Tempe Canal HUC boundary 15050100 - Western Canal AZ15050100-115 DWS, Agl, AgL	SRP Routine Monitoring At South Tempe Water Treatment Plant MGTPC004.18 SVCA 6-9.1	1998 - 10 partial suites 1999 - 8 partial suites 2000 - 11 partial suites 2001 - 11 partial suites 2002 - 10 partial suites	No exceedances					
	Summary Row DWS Inconclusive Agl Inconclusive AgL Inconclusive	1998 - 2002 50 samples	No exceedances					SRP collected 50 samples in 1998-2002. Assessed as "inconclusive" and placed on the Planning List due to missing core parameters: total metals (arsenic, chromium, lead, manganese, and copper).
Turkey Creek headwaters - unnamed tributary at 34 19 28 / 112 21 28 AZ15070102-036A A&Wc, FC, FBC, Agl, Agl	ADEQ TMDL Program At Forest Road 261 MGTRK014.8	2000 - 1 metals suite	No exceedances					
	ADEQ TMDL Program At Forest Road 706 MGTRK013.3	2000 - 1 metals suite	No exceedances					
	ADEQ TMDL Program At Goodwin MGTRK010.36	2000 - 1 metals suite 2001 - 3 metals suites	No exceedances					

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			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	
	Summary Row	2000 - 2001 6 samples 4 sampling events	No exceedances					ADEQ collected 6 samples at 3 sites in 2000-2001. Assessed as "Inconclusive" and placed on the Planning List due to missing core parameters: turbidity/SSC, total boron, dissolved oxygen, <i>Escherichia coli</i> , and total metals (manganese and mercury).
Turkey Creek unnamed tributary at 34 19 28 / 112 21 28 - Poland Creek AZ15070102-036B A&Ww, FC, FBC, Agl, AgL	ADEQ TMDL Program At corral MGTRK006.54	2000 - 2 partial suites 2001 - 2 partial suites	No exceedances					Lab reporting limits for dissolved cadmium and copper sample were too high to use results for assessment.
	ADEQ TMDL Program At Forest Road 93 MGTRK003.8	2000 - 2 partial suites 2002 - 1 partial suite	Lead (total) µg/L	15 (FBC)	<5 - 76	1 of 1		Lab reporting limit for 1 of 3 dissolved cadmium samples was too high to use results for assessment.
	ADEQ TMDL Program At bridge just above tailings MGTRK002.45	2000 - 4 metals (total) 2001 - 3 metals suites 2002 - 1 partial suites	Lead (total) µg/L	15 (FBC)	<5 - 66	1 of 5		Lab reporting limits for dissolved cadmium for 4 of 5 samples were too high to use results for assessment.
	ADEQ TMDL Program At tributary near mines MGTRK002.25	2002 - 1 partial suites	Lead (total) µg/L	15 (FBC)	54 - 88	1 of 1		
	ADEQ TMDL Program At tailings runoff (in stream)	2001 - 2 partial suites	Arsenic (dissolved) µg/L	360 (A&Ww acute)	62 - 18,200	1 of 2		
				190 (A&Ww chronic)	62 - 18,200	1 of 2		
			Arsenic (total) µg/L	50 (FBC)	43 - 35,900	2 of 2		
				200 (Agl)		2 of 2		
				1450 (FC)		1 of 2		
				2000 (Agl)		1 of 2		
			Cadmium (dissolved) µg/L	varies by hardness (A&Ww acute)	53 - 626	2 of 2		
				varies by hardness (A&Ww chronic)	53 - 626	2 of 2		
			Cadmium (total) µg/L	50 (Agl)	11 - 883	2 of 2		
				50 (Agl)		2 of 2		
				84 (FC)		2 of 2		
			Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	858 - 13,600	2 of 2		
				varies by hardness (A&Ww chronic)	858 - 13,600	2 of 2		
			Copper (total) µg/L	500 (Agl)	43 - 13,180	2 of 2		
				1300 (FBC)		2 of 2		

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			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
				5000 (Agl)		1 of 2		
			Lead (dissolved) µg/L	varies by hardness (A&Ww chronic)	<5 - 61	2 of 2		
			Lead (total) µg/L	15 (FBC)	5 - 1070	2 of 2		
				100 (Agl)		1 of 2		
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	7620 - 158,000	2 of 2		
				varies by hardness (A&Ww chronic)		2 of 2		
			Zinc (total) µg/L	10,000 (Agl)	1540 - 174,000	2 of 2		
				25,000 (Agl)		1 of 2		
				69,000 (FC)		1 of 2		
	ADEQ TMDL Program Downstream of mines MGTRK002.08	2000 - 1 partial suites 2001 - 2 partial suites 2002 - 1 partial suite	Arsenic (total) µg/L	50 (FBC)	<10 - 108	1 of 3		Some dissolved cadmium and dissolved copper samples could not be assessed due to lack of water hardness results.
			Lead (total) µg/L	15 (FBC)	<5 - 150	1 of 4		
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	<20 - 430	1 of 4		
				varies by hardness (A&Ww chronic)	<20 - 430	1 of 4		
	ADEQ TMDL Program Bottom site MGTRK002.02	2002 - 1 partial suite	Lead (total) µg/L	15 (FBC)	49 - 110	1 of 1		
	ADEQ TMDL Program Old biocriteria site MGTRK000.91	2001- 1 partial suite	No exceedances					
	Summary Row A&Ww Impaired FC Attaining FBC Inconclusive Agl Inconclusive AgL Attaining	2000 - 2002 24 samples 7 sampling events	Arsenic (dissolved) µg/L	360 (A&Ww acute)	<5 - 18,200	1 of 16 samples 1 of 6 events (in 2001)	Inconclusive	ADEQ collected 24 samples at 8 sites in 2000 - 2002. Assessed as "impaired" due to cadmium, copper, lead, and zinc exceedances.
				190 (A&Ww chronic)		1 of 16 samples 1 of 6 events	Inconclusive	
			Arsenic (total) µg/L	50 (FBC)	<5 - 37,900	3 of 16	Attaining	Placed on the Planning List due to at least 5 chronic exceedances and missing GLW parameters: Escherichia coli, total boron, total manganese, and turbidity/SSC.
				200 (Agl)		2 of 16	Attaining	
				1450 (FC)		1 of 16	Attaining	

TABLE 13. MIDDLE GILA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	
				2000 (Agl)		1 of 16	Attaining	
			Cadmium (dissolved) µg/L	varies by hardness (A&Ww acute)	<1.0 - 931	2 of 9 samples 2 of 4 events (In 2001)	Impaired	
				varies by hardness (A&Ww chronic)	<1.0 - 931	2 of 9 samples 2 of 4 events	Impaired	
			Cadmium (total) µg/L	84 (FC)	<1.0 - 883	2 of 19	Attaining	
				50 (Agl, AgL)		2 of 19	Attaining	
			Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	<10 - 13,600	2 of 13 samples 2 of 7 events (In 2001)	Impaired	
				varies by hardness (A&Ww chronic)		2 of 13 samples 2 of 7 events	Impaired	
			Copper (total) µg/L	500 (AgL)	<10 - 13,180	2 of 19	Attaining	
				1300 (FBC)		2 of 19	Attaining	
				5000 (Agl)		1 of 19	Attaining	
			Lead (dissolved)	varies by hardness (A&Ww chronic)	<5 - 81	2 of 18 samples 2 of 7 events	Impaired	
			Lead (total) µg/L	15 (FBC)	<5 - 1070	7 of 18 samples	Inconclusive	
				100 (AgL)		1 of 18 samples	Attaining	
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	<50 - 158,000	3 of 18 samples 3 of 7 events (In 2001)	Impaired	
				varies by hardness (A&Ww chronic)		3 of 18 samples 3 of 7 events	Impaired	
			Zinc (total)	10,000 (Agl)	<20 - 174,000	2 of 19	Attaining	
				25,000 (AgL)		2 of 19		
				69,000 (FC)		2 of 19		

TABLE 13. MIDDLE GILA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
Western Canal Tempe Canal - HUC boundary 15050100 AZ15060106B-262 Agl, AgL	SRP Routine Monitoring At Lateral 12.8 Near 19th Ave, Phoenix MGWSC012.39 SVCA 7-12.8	1998 - 11 partial suites 1999 - 11 partial suites 2000 - 11 partial suites 2001 - 11 partial suites 2002 - 12 partial suites	No exceedances					
	Summary Row Agl Inconclusive AgL Inconclusive	1998 - 2002 56 sampling events	No exceedances					SRP collected 56 samples in 1998 - 2002. Assessed as "Inconclusive" and placed on the Planning List due to missing core parameters: total metals (manganese, copper, and lead).
Western Canal HUC boundary 15050100 - terminus AZ15050100-990 DWS, Agl, AgL	SRP Routine Monitoring At Kyrene Intake MGWSC006.00 SVCA 7-22E	1998 - 11 partial suites 1999 - 11 partial suites 2000 - 11 partial suites 2001 - 10 partial suites 2002 - 12 partial suites	Lead (dissolved) µg/L	15 (DWS)	<2 - 18	1 of 55		
			Selenium (dissolved) µg/L	20 (AgL)	<2 - 24	1 of 55		Dissolved selenium data was compared to total selenium standard.
	Summary Row DWS Inconclusive Agl Inconclusive AgL Inconclusive	1998 - 2000 55 sampling events	Lead (dissolved) µg/L	15 (DWS)	<2 - 18	1 of 55	Attaining	SRP collected 55 samples in 1998 - 2002. Assessed as "Inconclusive" and placed on the Planning List due to missing core parameters: total metals (arsenic, chromium, lead, manganese, and copper).
			Selenium (dissolved) µg/L	20 (AgL)	<2 - 24	1 of 55	Attaining	
LAKES MONITORING DATA								
Alvord Park Lake AZL15060106B-0050 A&Ww, FC, PBC	AGFD Urban Lakes Study and Routine Monitoring MGALV-A 101040	1998 - 11 field 1999 - 1 partial suite 2000 - 2 partial suites 2002 - 1 partial suite	Ammonia mg/L	varies by temperature and pH (A&Ww chronic)	0.50 - 1.09	2 of 4		
	AGFD Urban Lakes Study and Routine Monitoring MGALV-B 101041	1998 - 11 field 1999 - 1 partial suite 2000 - 2 partial suites	Ammonia mg/L	varies by temperature and pH (A&Ww chronic)	0.50 - 1.18	2 of 4		
	AGFD Urban Lakes Study and Routine Monitoring MG-ALV-C 101042	1998 - 11 field 2000 - 2 partial suites	No exceedances					
	AGFD Urban Lakes Study and Routine Monitoring MG-ALV-ABC (composite from sites A, B, C) 101053	1998 - 4 partial suites	No exceedances					
	AGFD Routine Monitoring MG-ALV-I	1999 - 2 partial suites 2000 - 1 partial suite	Ammonia mg/L	varies by temperature and pH (A&Ww chronic)	<0.04 - 0.386	1 of 3		
	AGFD Routine Monitoring MG-ALV-ML	1999 - 1 partial suite 2001 - 1 partial suite	Ammonia mg/l	varies by temperature and pH (A&Ww chronic)	0.33	1 of 1		
	ADEQ Clean Lakes Program MGALV (Sites A, BR, SH) coli	2002 - 3 <i>Escherichia coli</i>	<i>Escherichia coli</i> CFU/100 ml	576 (PRC)	41 - >2419	1 of 3		

TABLE 13. MIDDLE GILA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row	1998 - 2002	Ammonia mg/L	varies by temperature and pH (A&Ww chronic)	<0.04 - 1.18	6 of 12 samples 4 of 6 events	Impaired	AGFD collected 51 samples at 5 sites in 1998-2002. Assessed as "Impaired" due to ammonia exceedances.
	A&Ww Impaired FC Inconclusive PBC Inconclusive	51 samples 16 sampling events	Escherichia coli CFU/100 ml	576 (PBC)	41 - >2419	1 of 3 events (In 2002)	Inconclusive	Placed on the Planning List due to E. coli exceedance and missing core parameters: total mercury and turbidity.
Chaparral Lake AZL15060106B-0300 A&Ww, FC, PBC, Agl	AGFD Urban Lakes Study and Routine Monitoring MGCHA-A 101045	1998 - 11 partial suites 2002 - 1 partial suite	Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	4.6 - 14.0 (62 - 184%)	3 of 12		
			pH (high) SU	6.5 - 9.0 (A&Ww, PBC, Agl)	7.9 - 9.4	2 of 12		
	AGFD Urban Lakes Study MGCHA-B 101046	1998 - 11 field	Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	5.2 - 13.8 (70 - 185%)	3 of 11		
			pH (high) SU	6.5 - 9.0 (A&Ww, PBC, Agl)	8.0 - 9.4	2 of 11		
	AGFD Urban Lakes Study MGCHA-AB 101056 (composite of sites A and B)	1998 - 4 partial suites	No exceedances					
	AGFD Routine Monitoring MGCHA-ML	2001 - 1 partial suite	No exceedances					
	ADEQ Lakes Program MGCHA (Sites BR, SH, A)	2002 - 5 Escherichia coli	Escherichia coli CFU/100 ml	576 (PBC)	15 - 2419	5 of 5		
	Summary Row	1998 - 2002	Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	4.6 - 14.0 (62 - 185%)	6 of 24	Impaired	AGFD collected 28 samples at 3 sites in 1998 - 2002. Assessed as "Impaired" due to low dissolved oxygen and Escherichia coli exceedances.
	A&Ww Impaired FC Attaining PBC Impaired Agl Inconclusive	28 samples 13 sampling events	Escherichia coli CFU/100 ml	576 (PBC)	15 - 2419	2 of 3 events (In 2002)	Impaired	
			pH (high) SU	6.5 - 9.0 (A&Ww, PBC, Agl)	7.9 - 9.4	4 of 24	Attaining	Placed on the Planning List due to missing core parameters: total boron and turbidity.
Cortez Park Lake AZL15060106B-0410 A&Ww, FC, PBC, Agl	AGFD Urban Lakes Study and Routine Monitoring MGCOR-A 101043	1998 - 11 field	Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	4.0 - 12.8 (53 - 185%)	1 of 11		
			pH (high) SU	6.5 - 9.0 (A&Ww, PBC, Agl)	8.2 - 10.0	6 of 11		
	AGFD Urban Lakes Study and Routine Monitoring MGCOR-B 101044	1998 - 11 field	Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	3.9 - 11.3 (51 - 153%)	1 of 11		
			pH (high) SU	6.5 - 9.0 (A&Ww, PBC, Agl)	8.2 - 9.6	2 of 11		
	AGFD Urban Lakes Study MGCOR-AB (composite of sites A and B) 101055	1998 - 4 partial suites	No exceedances					
	AGFD Routine Monitoring MGCOR-Bridge	1999 - 1 partial suite	Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	3.1 (43%)	1 of 1		
	AGFD Routine Monitoring MGCOR-Main Lagoon	1999 - 1 partial suite	Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	2.6 (37%)	1 of 1		

TABLE 13. MIDDLE GILA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
	AGFD Routine Monitoring MGCOR-Small Lagoon	1999 - 1 partial suite	Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	4.0 (57%)	1 of 1		
	Summary Row	1998 - 1999	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	2.6 - 12.8 (37 - 173%)	5 of 25	Impaired	AGFD collected 12 samples at 5 sites in 1998-1999. Assessed as "Impaired" due to low dissolved oxygen and high pH.
	A&Ww Impaired FC Inconclusive PBC Impaired Agl Impaired	29 samples 12 sampling events	pH (high) SU	6.5 - 9.0 (A&Ww, PBC, Agl)	7.7 - 10.0	8 of 25	Impaired	Placed on the Planning List due to: 1. Fish kill in 1999 related to an algal bloom. 2. Missing core parameters: <i>Escherichia coli</i> , total boron, and total mercury.
Fain Lake AZL15070102-0005 A&Ww, FC, FBC	ADEQ Lakes Program MGFAI-A 101400	2002 - 1 partial suite	Turbidity (former standard) NTU	25 (A&Ww)	25 - 33	1 of 1		
	Summary Row	2002	Turbidity (former standard) NTU	25 (A&Ww)	25 - 33	1 of 1	Inconclusive (see comment)	Insufficient monitoring data to assess. Placed on the Planning List due to exceedance of the former turbidity standard. Further investigation into the causes and sources of turbidity will be scheduled during the next monitoring cycle for this watershed.
Lake Pleasant AZL15070102-1100 A&Ww, FC, FBC, DWS, Agl, AgL	ADEQ Lakes Program MGPLE-A 100067	2000 - 2 partial suites 2001 - 3 full suites 2002 - 3 partial suites	Ammonia mg/L	varies by temperature and pH (A&Ww chronic)	0.03 - 0.42	1 of 5		
			Selenium (total) µg/L	2.0 (A&Ww chronic)	<2 - 3	1 of 7		
	ADEQ Lakes Program MGPLE-B 100068	2000 - 2 partial suites 2001 - 3 full suites 2002 - 3 partial suites	pH SU	6.5 - 9.0 (A&Ww, FBC, DWS, Agl, AgL)	7.7 - 10.6	1 of 8		
			Selenium (total) µg/L	2.0 (A&Ww chronic)	<2.0 - 3.0	1 of 6		
	ADEQ Lakes Program MGPLE-MAR 101000	2000 - 1 field + 3 VOCs 2001 - 2 field + 3 VOCs	No exceedances					
	Univ. of Arizona Reservoir Project for ADEQ MGPLE-C	2002 - 2 partial suites	No exceedances					
	AGFD Routine Monitoring MGPLE 5 sites (Agua Fria arm, Castle Creek arm, dam site, mid-lake, boat ramp)	1998 - 1 partial suite 2000 - 2 partial suites	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	4.8 - 8.9 (53 - 109%)	1 of 12 (at Agua Fria Arm site)		
	Summary Row	1998 - 2002	Ammonia mg/L	varies by pH and temperature (A&Ww chronic)	0.03 - 0.42	1 of 25 samples 1 of 9 events	Inconclusive	ADEQ, AGFD, and Univ. of Arizona collected 30 samples at 9 sites in 1998 - 2002. Assessed as "attaining some uses" and placed on the Planning List due to: 1. Ammonia exceedances; 2. Selenium exceedances; and 3. Missing core parameter: <i>Escherichia coli</i> .
	A&Ww Inconclusive FC Attaining FBC Inconclusive DWS Attaining Agl Attaining Agl Attaining	30 samples 9 sampling events	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	4.6 - 13.6 (53 - 168%)	1 of 38	Attaining	
			pH SU	6.5 - 9.0 (A&Ww, FBC, DWS, AgL, Agl)	7.1 - 10.6	1 of 32	Attaining	
			Selenium µg/L	2.0 (A&Ww chronic)	<2 - 3	2 of 17 samples 1 of 7 events	Inconclusive	

TABLE 13. MIDDLE GILA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	
Lynx Lake AZL15070102-0860 A&Wc, FC, FBC, DWS, Agl, AgL	AGFD Routine Monitoring MGLYN-Dam Dam Site	1998 - 1 partial suite 2000 - 1 partial suite	Manganese (total) µg/L	980 (DWS)	627 - 1520	1 of 1		
	AGFD Routine Monitoring MGLYN-EBR East of boat ramp	2000 - 1 partial suite	Lead (total) µg/L	15 (DWS, FBC)	87	1 of 1		
			Manganese (total) µg/L	980 (DWS)	3440	1 of 1		
	AGFD Routine Monitoring MGLYN-LBR Left of boat ramp	2000 - 1 partial suite	No exceedances					
	AGFD Routine Monitoring MGLYN-ML Mid-lake	1998 - 2 partial suites	No exceedances					
	AGFD Routine Monitoring MGLYN-WBR West of boat ramp	2001 - 1 partial suite	Lead (total) µg/L	15 (DWS, FBC)	19	1 of 1		
	ADEQ Lakes Program MGLYN-A 100037	2002 - 1 partial suite	Manganese (total) µg/L	980 (DWS)	850 - 2650	1 of 1		
	ADEQ Lakes Program MGLYN-B 100038	2002 - 1 partial suite	No exceedances					
	ADEQ Lakes Program MGLYN-BR 101399	2002 - 1 bacteria	No exceedances					
	Summary Row	1998 - 2002	Lead (total) µg/L	15 (DWS, FBC)	6 - 87	2 of 5	Inconclusive	ADEQ and AGFD collected 10 samples at 8 sites in 1998-2002. Assessed as "attaining some uses" and placed on the Planning List due to: 1. Lead exceedances, 2. Manganese exceedances, and 3. Missing core parameters: turbidity, <i>Escherichia coli</i> , total boron, total mercury dissolved metals (copper and cadmium).
	A&Wc Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive AgL Attaining	10 samples 7 sampling events	Manganese (total) µg/L	980 (DWS)	625 - 3440	3 of 7	Inconclusive	
Papago Park Ponds AZL15060106B-1030 A&Ww, FC, PBC	AGFD Urban Lakes Study MGPAP-A 101047	1998 - 10 pH + DO	No exceedances					
	AGFD Urban Lakes Study MGPAP-B 101048	1998 - 10 pH + DO	No exceedances					
	AGFD Urban Lakes Study MGPAP-AB (composite of sites A and B) 101057	1998 - 3 partial suites	No exceedances					
	Summary Row	1998	No exceedances					AGFD collected 23 samples at 2 sites for ADEQ in 1998. Assessed as "attaining some uses." Placed on the Planning List due to missing core parameters: <i>Escherichia coli</i> and turbidity.
	A&Ww Inconclusive FC Attaining PBC Inconclusive	23 samples 10 sampling events						
Tempe Town Lake AZL15060106B-1588 A&Ww, FC, FBC	City of Tempe 4 sites (below dam, mid lake, above dam, south shore) MG TTL	1999 - 7 total metals 2000 - 12 total metals 2001 - 12 total metals 2002 - 11 total metals, 100 field*	Mercury (total) µg/L	0.6 (FC)	<0.5 - 0.8	4 of 42		*Total metals samples were taken at the downstream dam site only. Field parameters were collected at all 4 sites. Additional field samples were taken prior to 2002. See comment in summary row.

TABLE 13. MIDDLE GILA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
	ADEQ Lakes Program MGTTL-A 101316	2002 - 4 partial suites	No exceedances					
	ADEQ Lakes Program MGTTL-B 101315	2002 - 3 partial suites	No exceedances					
	Summary Row A&Ww Attaining FC Attaining FBC Attaining	1999 - 2002 149 samples 56 sampling events	Mercury (total) µg/L	0.6 (FC)	<0.5 - 0.8	4 of 42	Attaining	ADEQ and the City of Tempe collected 149 samples from 6 sites. High pH levels occurred until the city began algaecide treatment in 2002. Since April 2002, pH levels have met standards; therefore, pH and dissolved oxygen samples prior to treatment date were not included in this assessment. Assessed as "attaining all uses." Note that ADEQ and the City of Tempe conducted "clean" mercury sampling in 2003 and found no exceedances of dissolved or total mercury water quality standards.

TABLE 14. MIDDLE GILA WATERSHED -- ASSESSMENT, PLANNING LIST, AND 303(d) STATUS

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
MIDDLE GILA WATERSHED -- STREAM ASSESSMENT				
Agua Fria River Sycamore Creek - Big Bug Creek 9 miles AZ15070102-023	A&Ww Attaining FC Attaining FBC Attaining DWS Attaining Agl Attaining Agl Attaining Category 1 - Attaining All Uses			
Agua Fria River Little Squaw Creek - Cottonwood Creek 6 miles AZ15070102-017	A&Ww Attaining FC Attaining FBC Attaining DWS Attaining Agl Attaining Agl Attaining Category 1 - Attaining All Uses			
Antelope Creek headwaters - Martinez Creek 16 miles AZ15070103-010	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 - Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Arizona Canal Granite Reef Dam - Cholla WTP 33 miles AZ15060106B-099A	DWS Inconclusive Agl Inconclusive Agl Inconclusive Category 3 - Inconclusive	On the Planning List due to <u>missing core parameters</u> : total fluoride, total metals (arsenic, chromium, copper, lead, manganese, and mercury).		
Arizona Canal Cholla WTP - HUC boundary 15070102 2 miles AZ15060106B-099B	Agl Inconclusive Agl Inconclusive Category 3 - Inconclusive	On the Planning List due to <u>missing core parameters</u> : pH and total metals (copper, lead, and manganese).		
Arnett Creek headwaters - Queen Creek 11 miles AZ15050100-1818	A&Ww Attaining FC Attaining FBC Attaining Category 1 - Attaining All Uses			
Blue John Creek headwaters - unnamed tributary to Lynx Creek 1 mile AZ15070102-471	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Category 3 - Inconclusive	On the Planning List due to: 1. Insufficient monitoring data to assess (1 sample). 2. <u>Acute and chronic cadmium</u> exceedance (1 of 1 sampling event). 3. <u>Acute and chronic copper</u> exceedance (1 of 1 sampling event). 4. <u>Acute and chronic zinc</u> exceedance (1 of 1 sampling event).		
Buckeye Canal Gila River - South Extension Canal 4 miles AZ15070101-209	Agl Inconclusive Agl Inconclusive Category 3 - Inconclusive	On the Planning List due to: 1. <u>Missing core parameters</u> : total boron and total metals (copper, lead, and manganese). 2. Added in 2002 due to <u>DDE</u> exceedance (1 of 1 sample). Laboratory reporting limits for current DDE samples and older samples were too high to use results for assessment.		
Cash Mine Creek headwaters - Hassayampa River 1 mile AZ15070103-349	A&Wc Not attaining FC Inconclusive FBC Not attaining Category 4A - Not attaining	On the Planning List due to: 1. <u>Missing core parameters</u> : all except dissolved metals. 2. TMDL follow-up monitoring. (<u>Acute and chronic copper</u> exceedance in 1 of 1 sampling event, <u>acute and chronic zinc</u> exceedance in 1 of 1 sampling event.)		Cadmium, copper, zinc and pH TMDLs for the Hassayampa River included loadings for Cash Mine Creek (a tributary). These TMDLs were approved by EPA in 2002. Add to the Planning List for TMDL follow-up monitoring.

TABLE 14. MIDDLE GILA WATERSHED -- ASSESSMENT, PLANNING LIST, AND 303(d) STATUS

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Cash Mine Creek, unnamed tributary of headwaters - Cash Mine Creek 1 mile AZ15070103-415	A&Wc Not attaining FC Inconclusive FBC Inconclusive Category 4A - Not attaining	On the Planning List due to: 1. Missing core parameters: all except dissolved metals. 2. TMDL follow-up monitoring (<u>Acute and chronic cadmium</u> exceedance in 1 of 1 sampling event, <u>acute and chronic copper</u> exceedance in 1 of 1 sampling event, <u>lead</u> exceedance in 1 of 1 sample, <u>acute and chronic zinc</u> exceedance in 1 of 1 sampling event.)		Cadmium, copper, zinc and pH TMDLs for the Hassayampa River included loadings for Cash Mine Creek, including unnamed tributary. These TMDLs were approved by EPA in 2002. Add to the Planning List for TMDL follow-up monitoring.
Cave Creek headwaters - Cave Creek Dam 33 miles AZ15060106B-026A	A&Ww Attaining FC Attaining FBC Attaining AgL Attaining Category 1 - Attaining All Uses			
Consolidated Canal 15060106B - above WTP intake 9 miles AZ15050100-074A	DWS Inconclusive AgL Inconclusive AgL Inconclusive Category 3 - Inconclusive	On the Planning List due to missing core parameters: total metals (arsenic, chromium, lead, manganese, and copper).		
Dripping Spring Wash headwaters - Gila River 20 miles AZ15050100-011	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 - Inconclusive	No current monitoring data. Added to the Planning List in 2002 due to insufficient monitoring data.		
Eastern Canal WTP below Warner Road - terminus 9 miles AZ15050100-207B	AgL Inconclusive AgL Inconclusive Category 3 - Inconclusive	On the Planning List due to missing core parameters: total metals (arsenic, chromium, lead, manganese, and copper).		
French Gulch headwaters - Hassayampa River 10 miles AZ15070103-239	A&Ww Impaired FC Attaining FBC Inconclusive Category 5 - Impaired (New designated uses since last assessment based on revisions of the tributary rule in 2002. AgL and AgL designated uses no longer apply.)	On the Planning List due to missing core parameters: dissolved oxygen, <i>Escherichia coli</i> , and turbidity/SSC. Remove beryllium from the Planning List. Standard modified in 2002. No exceedance of the new beryllium standard.	Add cadmium to the 303(d) List for chronic cadmium exceedances (3 of 7 sampling events). On the 303(d) List (since 1994) for copper and zinc. Acute copper exceedances in 27 of 50 sampling events, chronic copper exceedances in 38 of 50 sampling events. Acute and chronic zinc exceedances in 29 of 50 sampling events. TMDL investigation and sampling are ongoing. Delist manganese. Manganese standards were revised in 2002. No exceedances of the new manganese standard.	
Galena Gulch headwaters - Agua Fria River 6 miles AZ15070102-745	A&We Inconclusive PBC Inconclusive AgL Inconclusive Category 3 - Inconclusive	No current monitoring data. Added to the Planning List in 2002 due to cyanide exceedances in older data.		
Gila River Dripping Spring Wash - San Pedro River 11 miles AZ15050100-009	A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive AgL Inconclusive Category 3 - Inconclusive	No current monitoring data. Added to the Planning List in 2002 due to missing core parameters.		
Gila River San Pedro River - Mineral Creek 20 miles AZ15050100-008	A&Ww Inconclusive FC Attaining FBC Attaining AgL Attaining AgL Attaining Category 2 - Attaining Some Uses	On the Planning List due to former turbidity standard exceedances (2 of 6 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring. Remove mercury from the Planning List. Listed in 2002 due to inadequate detection limits to assess mercury standards. New detection limits were lower and indicated no mercury exceedances.		

TABLE 14. MIDDLE GILA WATERSHED – ASSESSMENT, PLANNING LIST, AND 303(d) STATUS

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Gila River Mineral Creek - Donnelly Wash 16 miles AZ15050100-007	A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgI Inconclusive AgL Inconclusive Category 3 – Inconclusive	No current monitoring data. Added to the Planning List in 2002 due to lack of <u>copper</u> and <u>turbidity</u> data following a spill clean-up.		
Gila River Ashurst-Hayden Dam - Florence WWTP 13 miles AZ15050100-003B	A&We Inconclusive PBC Inconclusive AgL Inconclusive Category 3 – Inconclusive	No current monitoring data. Added to the Planning List in 2002 due to <u>copper</u> exceedance (1 of 2 samples) and missing core parameters.		
Gila River Salt River - Agua Fria River 4 miles AZ15070101-015	A&Wedw Attaining FC Impaired PBC Attaining AgI Attaining AgL Attaining Category 5 – Impaired		EPA placed this reach on the 2002 303(d) List because <u>DDT metabolites, toxaphene, and chlordane</u> in fish tissue led to a fish consumption advisory. EPA's listing was based on a violation of narrative water quality standards. Arizona's Impaired Water Identification Rule requires adoption of narrative implementation procedures before the state may use narrative information in a listing decision, but once listed, the reach cannot be delisted until a TMDL is complete or sufficient data are collected to indicate that <u>these pesticides are no longer</u> a concern in fish tissue (fish consumption advisory removed). ADEQ is currently developing a workplan to complete a TMDL or other remedial strategy to deal with these legacy pollutants.	These pesticides do not stay in an aqueous state and bioaccumulate rapidly up the food chain. Additionally, most lab reporting limits are not low enough to use results for assessment; therefore, lack of exceedances in the water column does not provide sufficient information about pesticide problems in the stream.
Gila River Agua Fria River - Waterman Wash 12 miles AZ15070101-014	A&Wedw Inconclusive FC Impaired PBC Inconclusive AgI Inconclusive AgL Inconclusive Category 5 – Impaired	On the Planning List due to insufficient monitoring data to assess (only 1 sample). Added in 2002 due to missing core parameters.	EPA placed this reach on the 2002 303(d) List because <u>DDT metabolites, toxaphene, and chlordane</u> in fish tissue led to a fish consumption advisory. EPA's listing was based on a violation of narrative water quality standards. Arizona's Impaired Water Identification Rule requires adoption of narrative implementation procedures before the state may use narrative information in a listing decision, but once listed, this reach cannot be delisted until a TMDL is complete or sufficient data are collected to indicate that these pesticides are no longer a concern in fish tissue (fish consumption advisory removed). ADEQ is currently developing a workplan to complete a TMDL or other remedial strategy to deal with these legacy pollutants.	These pesticides do not stay in an aqueous state and bioaccumulate rapidly up the food chain. Additionally, most lab reporting limits are not low enough to use results for assessment; therefore, lack of exceedances in the water column does not provide sufficient information about pesticide problems in the stream.
Gila River Waterman Wash - Hassayampa River 14 miles AZ15070101-010	A&Wedw Inconclusive FC Impaired PBC Inconclusive AgI Inconclusive AgL Inconclusive Category 5 – Impaired	On the Planning List due to no current monitoring data.	EPA placed this reach on the 2002 303(d) List because <u>DDT metabolites, toxaphene, and chlordane</u> in fish tissue led to a fish consumption advisory. EPA's listing was based on a violation of narrative water quality standards. Arizona's Impaired Water Identification Rule requires adoption of narrative implementation procedures before the state may use narrative information in a listing decision, but once listed, this reach cannot be delisted until a TMDL is complete or sufficient data are collected to indicate that these pesticides are no longer a concern in fish tissue (fish consumption advisory removed). ADEQ is currently developing a workplan to complete a TMDL or other remedial strategy to deal with these legacy pollutants.	These pesticides do not stay in an aqueous state and bioaccumulate rapidly up the food chain. Additionally, most lab reporting limits are not low enough to use results for assessment; therefore, lack of exceedances in the water column does not provide sufficient information about pesticide problems in the stream.

TABLE 14. MIDDLE GILA WATERSHED – ASSESSMENT, PLANNING LIST, AND 303(d) STATUS

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Gila River Hassayampa River - Centennial Wash 7 miles AZ15070101-009	A&Wedw Inconclusive FC Impaired PBC Inconclusive Agl Inconclusive Agl Inconclusive Category 5 – Impaired	On the Planning List due to no current monitoring data.	EPA placed this reach on the 2002 303(d) List because <u>DDT metabolites, toxaphene, and chlordane</u> in fish tissue led to a fish consumption advisory. EPA's listing was based on a violation of narrative water quality standards. Arizona's Impaired Water Identification Rule requires adoption of narrative implementation procedures before the state may use narrative information in a listing decision, but once listed, this reach cannot be delisted until a TMDL is complete or sufficient data are collected to indicate that these pesticides are no longer a concern in fish tissue (fish consumption advisory removed). ADEQ is currently developing a workplan to complete a TMDL or other remedial strategy to deal with these legacy pollutants.	These pesticides do not stay in an aqueous state and bioaccumulate rapidly up the food chain. Additionally, most lab reporting limits are not low enough to use results for assessment; therefore, lack of exceedances in the water column does not provide sufficient information about pesticide problems in the stream.
Gila River Centennial Wash - Gillespie Dam 5 miles AZ15070101-008	A&Wedw Impaired FC Impaired FBC Attaining Agl Impaired Agl Attaining Category 5 – Impaired	On the Planning List due to former <u>turbidity</u> standard exceedances (5 of 23 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring. <u>Remove beryllium</u> from the Planning List. Standard modified in 2002. No exceedances of the new standard.	EPA placed this reach on the 2002 303(d) List because <u>DDT metabolites, toxaphene, and chlordane</u> in fish tissue led to a fish consumption advisory. EPA's listing was based on a violation of narrative water quality standards. Arizona's Impaired Water Identification Rule requires adoption of narrative implementation procedures before the state may use narrative information in a listing decision, but once listed, this reach cannot be delisted until a TMDL is complete or sufficient data are collected to indicate that these pesticides are no longer a concern in fish tissue (fish consumption advisory removed). ADEQ is currently developing a workplan to complete a TMDL or other remedial strategy to deal with these legacy pollutants. On the 303(d) List (since 1992) due to <u>boron</u> exceedances (22 of 23 samples). Add <u>selenium</u> to the 303(d) List due to chronic exceedances (18 of 23 sampling events). <u>Delist turbidity</u> . Standard repealed in 2002. Add to the Planning List due to exceedances of the former standard.	These pesticides do not stay in an aqueous state and bioaccumulate rapidly up the food chain. Additionally, most lab reporting limits are not low enough to use results for assessment; therefore, lack of exceedances in the water column does not provide sufficient information about pesticide problems in the stream.
Gila River Gillespie Dam - Rainbow Wash 5 miles AZ15070101-007	A&Ww Inconclusive FC Impaired FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 5 – Impaired	On the Planning List due to no current monitoring data.	EPA placed this reach on the 2002 303(d) List because <u>DDT metabolites, toxaphene, and chlordane</u> in fish tissue led to a fish consumption advisory. EPA's listing was based on a violation of narrative water quality standards. Arizona's Impaired Water Identification Rule requires adoption of narrative implementation procedures before the state may use narrative information in a listing decision, but once listed, this reach cannot be delisted until a TMDL is complete or sufficient data are collected to indicate that these pesticides are no longer a concern in fish tissue (fish consumption advisory removed). ADEQ is currently developing a workplan to complete a TMDL or other remedial strategy to deal with these legacy pollutants.	These pesticides do not stay in an aqueous state and bioaccumulate rapidly up the food chain. Additionally, most lab reporting limits are not low enough to use results for assessment; therefore, lack of exceedances in the water column does not provide sufficient information about pesticide problems in the stream.

TABLE 14. MIDDLE GILA WATERSHED – ASSESSMENT, PLANNING LIST, AND 303(d) STATUS

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Gila River Rainbow Wash - Sand Tank 17 miles AZ15070101-005	A&Ww Inconclusive FC Impaired FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 5 – Impaired	On the Planning List due to no current monitoring data.	EPA placed this reach on the 2002 303(d) List because DDT metabolites, toxaphene, and chlordane in fish tissue led to a fish consumption advisory. EPA's listing was based on a violation of narrative water quality standards. Arizona's Impaired Water Identification Rule requires adoption of narrative implementation procedures before the state may use narrative information in a listing decision, but once listed, this reach cannot be delisted until a TMDL is complete or sufficient data are collected to indicate that these pesticides are no longer a concern in fish tissue (fish consumption advisory removed). ADEQ is currently developing a workplan to complete a TMDL or other remedial strategy to deal with these legacy pollutants.	These pesticides do not stay in an aqueous state and bioaccumulate rapidly up the food chain. Additionally, most lab reporting limits are not low enough to use results for assessment; therefore, lack of exceedances in the water column does not provide sufficient information about pesticide problems in the stream.
Gila River Sand Tank - Painted Rocks Reservoir 19 miles AZ15070101-001	A&Ww Inconclusive FC Impaired FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 5 – Impaired	On the Planning List due to no current monitoring data.	EPA placed this reach on the 2002 303(d) List because DDT metabolites, toxaphene, and chlordane in fish tissue led to a fish consumption advisory. EPA's listing was based on a violation of narrative water quality standards. Arizona's Impaired Water Identification Rule requires adoption of narrative implementation procedures before the state may use narrative information in a listing decision, but once listed, this reach cannot be delisted until a TMDL is complete or sufficient data are collected to indicate that these pesticides are no longer a concern in fish tissue (fish consumption advisory removed). ADEQ is currently developing a workplan to complete a TMDL or other remedial strategy to deal with these legacy pollutants.	These pesticides do not stay in an aqueous state and bioaccumulate rapidly up the food chain. Additionally, most lab reporting limits are not low enough to use results for assessment; therefore, lack of exceedances in the water column does not provide sufficient information about pesticide problems in the stream.
Grand Canal HUC boundary 15070101 - New River 5 miles AZ15070102-250	Agl Inconclusive Agl Inconclusive Category 3 – Inconclusive	On the Planning List due to missing core parameters: field pH and total metals (copper, lead, and manganese).		
Hassayampa River headwaters - Copper Creek 11 miles AZ15070103-007A	A&Wc Not attaining FC Not attaining FBC Not attaining Agl Not attaining Agl Not attaining Category 4A – Not attaining	On the Planning List due to: 1. TMDL follow-up monitoring for cadmium, copper, pH, and zinc. (Acute cadmium exceedances in 8 of 10 sampling events, chronic cadmium exceedances in 10 of 10 sampling events, and total copper exceedances in 1 of 5 samples. Acute and chronic copper exceedances in 9 of 10 sampling events and total copper exceedances in 9 of 48 samples. Low pH in 16 of 52 samples. Acute and chronic zinc exceedances in 10 of 10 sampling events.) 2. Missing core parameters: total boron, <i>Escherichia coli</i> , and total metals (mercury, manganese, copper, and lead).	Delist zinc. A zinc TMDL was approved by EPA in 2002 (see comment *). Placed on the Planning List for TMDL follow-up monitoring.	*TMDLs for cadmium, copper, pH, and zinc were approved by EPA in 2002. Note cadmium and copper were delisted in 2002 due to insufficient exceedances to meet the Impaired Waters Identification Rule; however, the draft TMDL had already been completed and submitted to EPA for approval. Placed on the Planning List for TMDL follow-up monitoring for all parameters.
Hassayampa River Copper Creek - Blind Indian Creek 20 miles AZ15070103-007B	A&Ww Inconclusive FC Attaining FBC Inconclusive Agl Attaining Agl Attaining Category 2 – Attaining Some Uses	On the Planning List due to: 1. Chronic cadmium exceedance (1 of 16 sampling events). 2. <i>Escherichia coli</i> exceedance (1 of 12 sampling events, occurred in 2001). Remove beryllium from the Planning List. Standard modified in 2002. No exceedances of the new standard.		
Hassayampa River Cottonwood Creek - Martinez Wash 32 miles AZ15070103-004	A&Ww Attaining FC Attaining FBC Attaining Agl Attaining Agl Attaining Category 1 – Attaining All Uses	Remove arsenic, beryllium, copper, <i>Escherichia coli</i> , lead, and turbidity from the Planning List. Current data indicate that all uses are "attaining" for these parameters.		

TABLE 14. MIDDLE GILA WATERSHED – ASSESSMENT, PLANNING LIST, AND 303(d) STATUS

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Hassayampa River Sols Wash - 8 miles below Wickenburg 9 miles AZ15070103-002A	A&Ww Attaining FC Attaining FBC Inconclusive Agl Attaining AgL Attaining Category 2 – Attaining Some Uses	On the Planning List due to <u>Escherichia coli</u> exceedance (1 of 3 sampling events, occurred in 2002).		
Hassayampa River Buckeye Canal - Gila River 2 miles AZ15070103-001B	A&Ww Inconclusive FC Impaired FBC Attaining Agl Inconclusive Category 5 – Impaired	On the Planning List due to former <u>turbidity</u> standard exceedance (1 of 4 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.	EPA placed this reach on the 2002 303(d) List because <u>DDT metabolites, toxaphene, and chlordane</u> in fish tissue led to a fish consumption advisory. EPA's listing was based on a violation of narrative water quality standards. Arizona's Impaired Water Identification Rule requires adoption of narrative implementation procedures before the state may use narrative information in a listing decision, but once listed, this reach cannot be delisted until a TMDL is complete or sufficient data are collected to indicate that these pesticides are no longer a concern in fish tissue (fish consumption advisory removed). ADEQ is currently collecting fish tissue data in support of completing a TMDL. DDE (DDT metabolite) exceeded standards in 2 of 4 water samples.	These pesticides do not stay in an aqueous state and bioaccumulate rapidly up the food chain. Additionally, most lab reporting limits are not low enough to use results for assessment; therefore, lack of exceedances in the water column does not provide sufficient information about pesticide problems in the stream.
Hassayampa River, <u>unnamed tributary of</u> headwaters - Hassayampa River 1 mile AZ15070103-417	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Category 3 – Inconclusive	On the Planning List due to: 1. Insufficient monitoring data to assess (1 sample). 2. <u>Acute and chronic copper</u> exceedance (1 of 1 sampling event).		
Indian Bend Wash headwaters - Salt River 5 miles AZ15060106B-179	A&We Inconclusive PBC Inconclusive Category 3 – Inconclusive	On the Planning List due to: 1. <u>Lead</u> exceedance (1 of 3 samples). 2. <u>Missing core parameters</u> : dissolved metals (cadmium, copper, and zinc).		
Little Ash Creek headwaters - Ash Creek 18 miles AZ15070102-039	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 – Inconclusive	On the Planning List due to insufficient monitoring data to assess (2 samples).		
Lynx Creek headwaters - 34 34 29 / 112 21 05 13 miles AZ15070102-033A (Reach was split into coldwater and warmwater segments since last assessment. No current data in 033B. Previous data in 033A.)	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 – Inconclusive	No current monitoring data. Added to the Planning List in 2002 due to <u>cadmium</u> and <u>copper</u> exceedance (1 of 1 sample).		
Lynx Creek, <u>unnamed tributary of</u> headwaters - Lynx Creek 1 mile AZ15070102-124	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Category 3 – Inconclusive	Add to the Planning List due to: 1. Insufficient monitoring data to assess (1 sampling event). 2. <u>Acute and chronic cadmium</u> exceedance (1 of 1 sampling event). 3. <u>Acute and chronic copper</u> exceedance (1 of 1 sampling event). 4. <u>Acute and chronic zinc</u> exceedance (1 of 1 sampling event).		
Martinez Canyon headwaters - Box Canyon 10 miles AZ15050100-080	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 — Inconclusive	Add to the Planning List due to insufficient monitoring data to assess (1 sampling event).		

TABLE 14. MIDDLE GILA WATERSHED – ASSESSMENT, PLANNING LIST, AND 303(d) STATUS

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Mineral Creek headwaters - Devils Canyon 9 miles AZ15050100-012A	A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive Category 3 – Inconclusive	No current monitoring data. Added to the Planning List in 2002 due to insufficient monitoring data.		
Mineral Creek Devils Canyon - Gila River 10 miles AZ15050100-012B	A&Ww Impaired FC Inconclusive FBC Inconclusive AgL Attaining Category 5 – Impaired	On the Planning List due to: 1. Former turbidity standard exceedances (7 of 41 samples above treatment). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring. 2. Missing core parameters: <i>Escherichia coli</i> and total mercury.	Add selenium to the 303(d) List due to chronic selenium exceedances (19 of 41 sampling events). On the 303(d) list for copper since 1992. (Acute copper exceedances in 1 of 41 sampling events; chronic copper exceeded in 2 of 41 sampling events, both in 2001.) Delist beryllium. Standards revised in 2002. No exceedances of the new standard. Delist pH and zinc. No exceedances since January, 2001, following completion of water diversion.	
New River headwaters - Interstate 17 25 miles AZ15070102-006A	A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive AgL Inconclusive Category 3 – Inconclusive	On the Planning List insufficient monitoring data to assess (1 sampling event).		
Queen Creek headwaters - Superior Mine WWTP 9 miles AZ15050100-014A	A&We Impaired PBC Attaining AgL Inconclusive Category 5 – Impaired	On the Planning List due to missing core parameters: dissolved cadmium and total lead.	On the 303(d) List (since 2002) for copper. Although current copper data are inconclusive (1 of 8 sampling events exceeded), the reach cannot be delisted until a TMDL is complete or copper data indicate designated uses are being attained.	
Queen Creek Superior Mine WWTP - Potts Canyon 6 miles AZ15050100-014B	A&Wedw Impaired PBC Inconclusive Category 5 – Impaired	On the Planning List due to: 1. Chronic selenium exceedance (1 of 1 sampling event). 2. Missing core parameters: dissolved cadmium, <i>Escherichia coli</i> , and total lead.	Add copper to the 303(d) List due to acute and chronic copper exceedances (2 of 9 sampling events, occurred in 2000 and 2002).	
Salt River 2 km below Granite Reef Dam - Interstate 10 bridge 19 miles AZ15060106B-001B	A&We Inconclusive PBC Inconclusive Category 3 – Inconclusive	On the Planning List due to insufficient monitoring data to assess (1 sampling event).		
Salt River 23rd Ave WWTP - Gila River 14 miles AZ15060106B-001D	A&Wedw Attaining FC Impaired PBC Attaining AgL Attaining AgL Attaining Category 5 – Impaired		EPA placed this reach on the 2002 303(d) List because of chronic selenium and copper exceedances in fish tissue led to a fish consumption advisory. EPA's listing was based on a violation of narrative water quality standards. Arizona's Impaired Water Identification Rule requires adoption of narrative implementation procedures before the state may use narrative information in a listing decision, but once listed, this reach cannot be delisted until a TMDL is complete or sufficient data are collected to indicate that these pesticides are no longer a concern in fish tissue (fish consumption advisory removed). ADEQ is currently developing a workplan to complete a TMDL or other remedial strategy to deal with these legacy pollutants.	These pesticides do not stay in an aqueous phase and bioaccumulate rapidly up the food chain. Additionally, most lab reporting limits are not low enough to use results for assessment; therefore, lack of exceedances in the water column does not provide sufficient information about pesticide problems in the stream.
South Canal Granite Reef Dam - Consolidated Canal 10 miles AZ15060106B-180	DWS Inconclusive AgL Inconclusive AgL Inconclusive Category 3 – Inconclusive	On the Planning List due to missing core parameters: total metals (arsenic, chromium, lead, manganese, and copper).		

TABLE 14. MIDDLE GILA WATERSHED -- ASSESSMENT, PLANNING LIST, AND 303(d) STATUS

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Sycamore Creek Tank Canyon - Agua Fria River 18 miles AZ15070102-024B (Reach was split into coldwater and warmwater segments since the last assessment. No current data in 024A.)	A&Ww Attaining FC Attaining FBC Attaining AgL Attaining Category 1 - Attaining All Uses			
Tempe Canal HUC boundary 15050100 - Western Canal 1 mile AZ15050100-115	DWS Inconclusive AgL Inconclusive AgL Inconclusive Category 3 - Inconclusive	On the Planning List due to <u>missing core parameters</u> : total metals (arsenic, chromium, lead, manganese, and copper).		
Turkey Creek headwaters - unnamed tributary at 34 19 28 / 112 21 28 9 miles AZ15070102-036A (Reach was split into coldwater and warmwater segments since last assessment.)	A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive AgL Inconclusive Category 3 - Inconclusive	On the Planning List due to <u>missing core parameters</u> : dissolved oxygen, <i>Escherichia coli</i> , total boron, total metals (manganese and mercury), and turbidity/SSC.	<u>Delist cadmium, copper, and zinc.</u> All past and current exceedances on Turkey Creek occurred in the lower segment (UJBB). (Reach was split into coldwater and warmwater segments in 2002, no basis for this segment to be listed).	
Turkey Creek unnamed tributary at 34 19 28 / 112 21 28 - Poland Creek 21 miles AZ15070102-036B (Reach was split into coldwater and warmwater segments since last assessment.)	A&Ww Impaired FC Attaining FBC Inconclusive AgL Inconclusive AgL Attaining Category 5 - Impaired	On the Planning List due to: 1. <u>Acute and chronic arsenic exceedance</u> (1 of 6 sampling events, occurred in 2001) and <u>total arsenic exceedances</u> (3 of 16 samples). 2. <u>Total lead exceedances</u> (7 of 18 samples). 3. <u>Missing core parameters</u> : <i>Escherichia coli</i> , total boron, total manganese, and turbidity/SSC.	<u>Add lead</u> to the 303(d) List for chronic lead exceedances (2 of 7 sampling events). On the 303(d) List for <u>cadmium, copper, and zinc</u> since 1992. (Acute and chronic cadmium exceedances in 2 of 4 sampling events, in 2001. Acute and chronic copper exceedances in 2 of 7 sampling events, in 2001. Acute and chronic zinc exceedances in 3 of 7 sampling events, in 2001). TMDL investigation is in progress.	
Western Canal Tempe Canal - HUC boundary 15050100 15 miles AZ15060106B-262	AgL Inconclusive AgL Inconclusive Category 3 - Inconclusive	On the Planning List due to <u>missing core parameters</u> : total metals (manganese, copper, and lead).		
Western Canal 10 miles HUC boundary 15050100 - terminus AZ15050100-990	DWS Inconclusive AgL Inconclusive AgL Inconclusive Category 3 - Inconclusive	On the Planning List due to <u>missing core parameters</u> : total metals (arsenic, chromium, lead, manganese, and copper).		
MIDDLE GILA WATERSHED - LAKE ASSESSMENTS				
Alvord Park Lake 27 acres AZL15060106B-0050	A&Ww Impaired FC Inconclusive PBC Inconclusive Category 5 - Impaired Trophic status - Hypereutrophic	On the Planning List due to: 1. <u><i>Escherichia coli</i> exceedance</u> (1 of 3 sampling events, occurred in 2002). 2. <u>Missing core parameters</u> : total mercury and turbidity. <u>Remove beryllium</u> from the Planning List. No exceedances under the new standard.	<u>Add ammonia</u> to the 303(d) List for chronic ammonia exceedances (4 of 6 sampling events).	
Chaparral Lake 13 acres AZL15060106B-0300	A&Ww Impaired FC Attaining PBC Impaired AgL Inconclusive Category 5 - Impaired Trophic status - Hypereutrophic	On the Planning List due to <u>missing core parameters</u> : total boron, <i>Escherichia coli</i> , and turbidity. <u>Remove pH</u> from the Planning List. Current data (4 of 24 samples exceed) indicate support of designated uses.	<u>Add dissolved oxygen</u> to the 303(d) List for low dissolved oxygen (6 of 24 samples). <u>Add <i>Escherichia coli</i></u> to the 303(d) List for exceedances in 2 of 3 sampling events (in 2002).	

TABLE 14. MIDDLE GILA WATERSHED – ASSESSMENT, PLANNING LIST, AND 303(d) STATUS

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Cortez Park Lake 2 acres AZL15060106B-0410	A&Ww Impaired F/C Inconclusive PBC Impaired Agl Impaired Category 5 – Impaired Trophic status – Eutrophic	On the Planning List due to: 1. <u>Missing core parameters</u> : <i>Escherichia coli</i> , total boron, and total mercury. 2. <u>Fish kill</u> in 1999 related to an algal bloom.	Add dissolved oxygen and pH to the 303(d) List for low dissolved oxygen (5 of 25 samples) and low pH (8 of 25 samples).	Fish kill in 1999 related to an algal bloom may be evidence of narrative standards violations.
Fain Lake 10 acres AZL15070102-0005	A&Ww Inconclusive F/C Inconclusive PBC Inconclusive Category 3 – Inconclusive Trophic status – Hypereutrophic	On the Planning List due to: 1. Insufficient monitoring data to assess (1 sampling event). 2. Former <u>turbidity</u> standard exceedance (1 of 1 sample). Investigation into the causes and sources of turbidity will be scheduled during the next monitoring cycle for this watershed.		
Lake Pleasant 2042 acres AZL15070102-1100	A&Ww Inconclusive FC Attaining FBC Inconclusive DWS Attaining Agl Attaining Agl Attaining Category 2 – Attaining Some Uses Trophic status – Oligotrophic - Mesotrophic	On the Planning List due to: 1. <u>Chronic ammonia</u> exceedance (1 of 9 sampling events). 2. <u>Chronic selenium</u> exceedance (1 of 7 sampling events). 3. <u>Missing core parameter</u> : <i>Escherichia coli</i> . Remove fish kill from the Planning List. No fish kills reported 1998-2002.		
Lynx Lake 510 acres AZL15070102-0860	A&Wc Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Attaining Category 2 – Attaining Some Uses Trophic status – Mesotrophic	On the Planning List due to: 1. <u>Lead</u> exceedances (2 of 5 samples). 2. <u>Manganese</u> exceedances (3 of 7 samples). 3. <u>Missing core parameters</u> : <i>Escherichia coli</i> , dissolved metals (cadmium and copper), total boron, total mercury, and turbidity.		
Painted Rock Reservoir 100 acres AZL15070101-1020A	A&Ww Inconclusive F/C Inconclusive F/C Impaired Agl Inconclusive Agl Inconclusive Category 5 – Impaired Trophic status not calculated	On the Planning List due to insufficient water quality monitoring data.	EPA placed this reach on the 2002 303(d) List because DDT metabolites, toxaphene, and chlordane in fish tissue led to a fish consumption advisory. EPA's listing was based on a violation of narrative water quality standards. Arizona's Impaired Waters Identification Rule requires adoption of narrative implementation procedures before the state may use narrative information in a listing decision, but once listed, this lake cannot be delisted until a TMDL is complete or sufficient data are collected to indicate that these pesticides are no longer a concern in fish tissue (fish consumption advisory removed). ADEQ is currently developing a workplan to complete a TMDL or other remedial strategy to deal with these legacy pollutants.	These pesticides do not stay in an aqueous state and bioaccumulate rapidly up the food chain. Additionally, most lab reporting limits are not low enough to use results for assessment; therefore, lack of exceedances in the water column does not provide sufficient information about pesticide problems in the stream.
Papago Park Ponds 6 acres AZL15060106B-1030	A&Ww Inconclusive F/C Attaining PBC Inconclusive Category 2 – Attaining Some Uses Trophic status – Eutrophic	On the Planning list due to <u>missing core parameters</u> : <i>Escherichia coli</i> and turbidity.		
Tempe Town Lake 220 acres AZL15060106B-1588	A&Ww Attaining F/C Attaining PBC Attaining Category 1 – Attaining All Uses Trophic status not calculated (Designated uses have changed on this lake since the last assessment.)	Remove pH from the Planning List. Weekly pH samples have met applicable standards since treatment began in April of 2002.		



Pinto Creek, a tributary of the Salt River, near Globe, Arizona.

The Salt Watershed

This watershed is composed of the Salt River drainage from its headwaters to Granite Reef Dam, excluding the Verde River drainage. The watershed can be divided into four sub-basins: White River, Black River, Tonto Creek, and the Salt River. Perennial water in the White River and Black River provides much of the water used in the Phoenix metropolitan area.

The population of this 6,242 square mile watershed is approximately 40,500 people (2000 census), with most of this population in the Superior-Globe-Miami mining district. Land ownership is approximately: 2% private land, 1% state land, 48% federal land, and 49% Tribal land. The principal land uses are open range grazing, recreation, forestry, and mining, which is centralized in the Superior-Miami-Globe area. Nine wilderness areas have been set aside, with restricted land uses and activities.

Elevations range from 10,600 feet (above sea level) in the White Mountains to about 2,000 feet at Granite Reef Dam. The White River and Black River drainages, along with the headwaters of most of the other major tributaries in this watershed, are above 5,000 feet elevation (high desert flora and fauna). These areas support coldwater aquatic communities where perennial waters exist.

The assessment – Assessments were completed for 39 stream reaches and seven lakes in this watershed. Of the 384 stream miles assessed, 131 miles were attaining all uses (nine reaches) and 72 miles (eight reaches) were assessed as impaired or not attaining a use. Of the 22,645 lake acres assessed, none were assessed as attaining all uses and 600 acres (two lakes) were assessed as impaired. All others are inconclusive or attaining some uses.

A watershed assessment map follows on the next page, illustrating stream and lake assessments by category. The Salt River **monitoring table (Table 15)** following the map summarizes the water quality data used in the assessment. It is followed by the **assessment table (Table 16)**, which bridges current assessments with past assessments and impaired water identification. Important to note in this table are comments regarding previous 303(d) lists (what has been added and removed), category designations (1 through 5), references to potential actions by EPA, and status of TMDLs.

Detailed information on how to use these tables is found at the beginning of this chapter (p. IV-1). Assessment methods and criteria can be found in Chapter III.

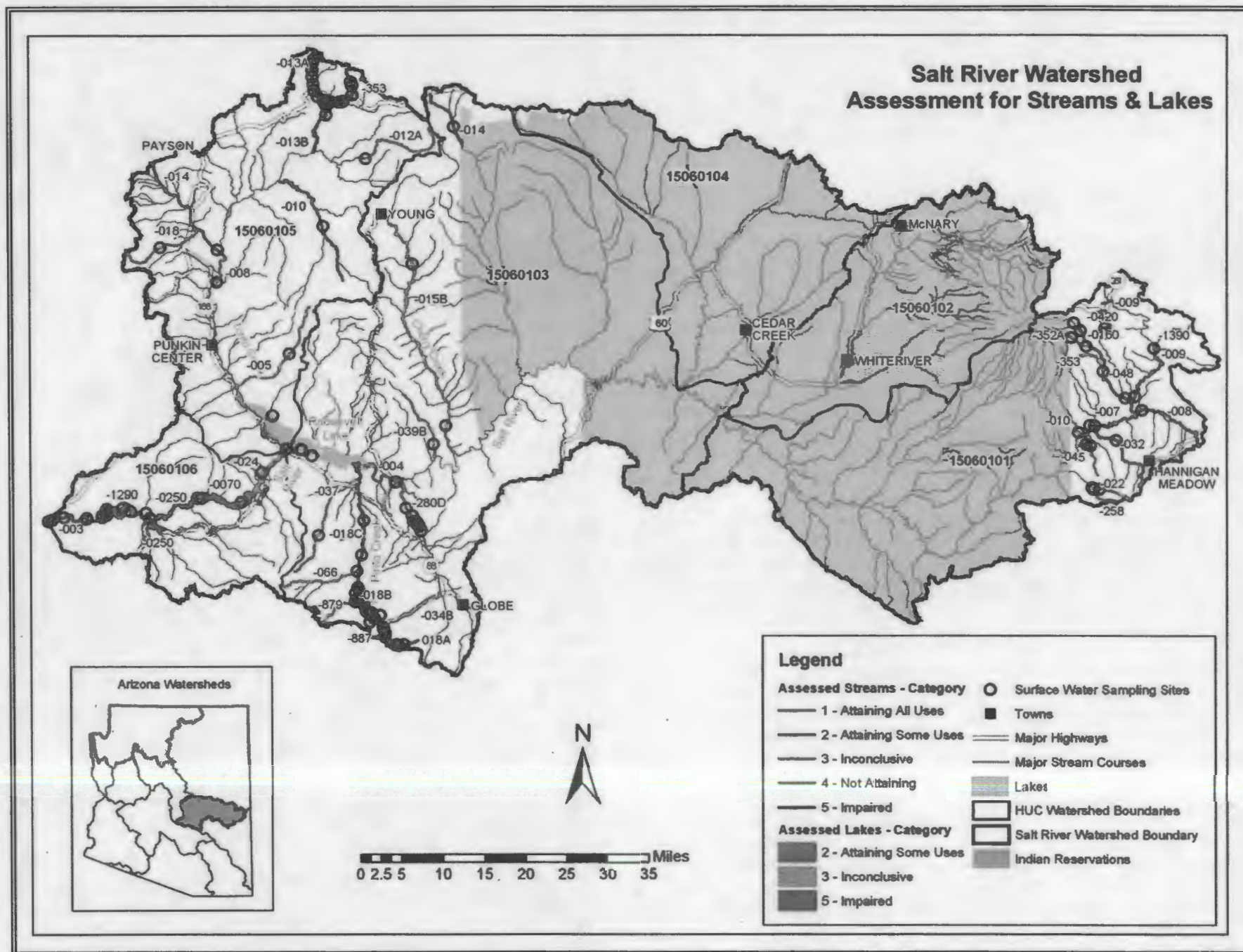


Figure 20. Watershed monitoring and assessments

TABLE 15. SALT WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
STREAM MONITORING DATA								
Bear Wallow Creek North and South Forks - Black River AZ15060101-023 A&Wc, FC, FBC, AgL Unique Water	ADEQ Ambient Monitoring Below South Fork Bear Wallow Creek SRBWL003.48 101198	2001 - 1 full suite 2002 - 1 partial + 1 full suite	No exceedances					Lab reporting limit for dissolved copper too high to use results for assessment.
	Summary Row A&Wc Inconclusive FC Attaining FBC Inconclusive AgL Attaining	2001 - 2002 3 sampling events	No exceedances					ADEQ collected 3 samples in 2001- 2002. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: <i>Escherichia coli</i> and dissolved copper.
Bear Wallow Creek, North Fork headwaters - Bear Wallow Creek AZ15060101-022 A&Wc, FC, FBC, AgL Unique Water	ADEQ Biocriteria Program Above South Fork Bear Wallow Creek SRNBE000.54 100605	1998 - 1 partial suite	No exceedances					Lab reporting limits for dissolved copper samples were too high to use results for assessment.
	ADEQ Ambient Monitoring Above South Fork Bear Wallow Creek SRNBE000.06 101262	2001 - 1 full suite 2002 - 1 full suite	No exceedances					
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	1998 3 sampling events	No exceedances					ADEQ collected 3 samples at 2 sites in 1998-2002. Assessed as "Inconclusive" and placed on the Planning List due to missing core parameters: <i>Escherichia coli</i> , dissolved metals (copper and zinc), and total metals (mercury, copper, and lead).
Bear Wallow Creek, South Fork headwaters - Bear Wallow Creek AZ15060101-258 A&Wc, FC, FBC, AgL Unique Water	ADEQ Ambient Monitoring Upstream of horse pack trail SRNBE000.10 101261	2001 - 1 full suite 2002 - 1 full suite	No exceedances					
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	1998 2 sampling events	No exceedances					Insufficient monitoring data to assess.

TABLE 15. SALT WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
Beaver Creek headwaters - Black River AZ15060101-008 A&Wc, FC, FBC, Agl, AgL	ADEQ Ambient Monitoring Near Sprucedale SRBEV000.77 100373	2001 - 1 full + 1 partial suite 2002 - 2 full + 4 partial suites	Turbidity (former standard) NTU	10 (A&Wc)	6.4 - 17.2	2 of 8		Lab reporting limits for dissolved copper samples too high to use results for assessment.
	Summary Row A&Wc Inconclusive FC Attaining FBC Attaining Agl Attaining AgL Attaining	2001 - 2002 8 sampling events	Turbidity (former standard) NTU	10 (A&Wc)	6.4 - 17.2	2 of 8	Inconclusive (see comment)	ADEQ collected 3 samples in 2001- 2002. Assessed as "attaining some uses" and placed on the Planning List due to exceedances of the former turbidity standard. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring. Also placed on Planning List due to missing core parameter: dissolved copper.
Black River Beaver Creek - Reservation Creek AZ15060101-007 A&Wc, FC, FBC, DWS, Agl, AgL	ADEQ Ambient Monitoring Upstream of Forest Service Road #25 SRBLR029.71 101202	2001 - 1 full suite 2002 - 1 full + 1 partial suite	No exceedances					Lab reporting limits for dissolved copper samples too high to use results for assessment.
	Summary Row A&Wc Inconclusive FC Attaining FBC Inconclusive DWS Attaining Agl Attaining AgL Attaining	2001 - 2002 3 sampling events	No exceedances					ADEQ collected 3 samples in 2001- 2002. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: <i>Escherichia coli</i> and dissolved copper.
Black River, <u>East Fork</u> headwaters-Black River AZ15060101-009 A&Wc, FC, FBC, DWS, Agl, AgL	ADEQ Ambient Monitoring Below Three Forks Creek SREFB006.98 101203	2001 - 1 full suite 2002 - 3 full suites	No exceedances					Lab reporting limits for dissolved copper too high to use results for assessment.
	ADEQ Ambient Monitoring At Buffalo Crossing SREFB000.81 100375	2001 - 1 full suite 2002 - 3 full suites	No exceedances					
	Summary Row A&Wc Inconclusive FC Attaining FBC Attaining DWS Attaining Agl Attaining AgL Attaining	2001 - 2002 8 samples 4 sampling events	No exceedances					ADEQ collected 8 samples at 2 sites in 2001-2002. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameter: dissolved copper.
Black River, <u>West Fork</u> headwaters - Black River AZ15060101-048 A&Wc, FC, FBC, DWS, Agl, AgL	ADEQ Biocriteria Program Above Thompson Creek confluence SRWFB011.08 100692	1998 - 1 partial suite	No exceedances					Lab reporting limits for dissolved metals samples were too high to assess the chronic standards.
	ADEQ Ambient Monitoring Below Forest Road #116 SRWFB009.96 101204	2001 - 1 full suite 2002 - 3 full suites	No exceedances					

TABLE 15. SALT WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	ADEQ Ambient Monitoring At Buffalo Crossing SRWFB000.78 100376	2001 - 1 full + 1 partial suite 2002 - 3 full + 7 partial suites	No exceedances					
	Summary Row A&Wc Inconclusive FC Attaining FBC Attaining DWS Attaining Agl Attaining Agl Attaining	1998 - 2002 17 samples 13 sampling events	No exceedances					ADEQ collected 8 samples at 2 sites in 2001-2002. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: dissolved metals (cadmium, copper, and zinc).
Campaign Creek headwaters - Pinto Creek AZ15060103-037 A&Ww, FC, FBC, AgL	ADEQ Ambient Monitoring At Superstition Wilderness SRCGN007.70 100431	2001 - 1 full suite 2002 - 2 full + 1 partial suite	No exceedances					
	Summary Row A&Ww Attaining FC Attaining FBC Attaining Agl Attaining	2001 - 2002 4 sampling events	No exceedances					ADEQ collected 4 samples in 2001- 2002. Assessed as "attaining all uses."
Canyon Creek headwaters - White Mountain Apache Reservation AZ15060103-014 A&Wc, FC, FBC, DWS, AgL, AgL	ADEQ Ambient Monitoring Near Young, Arizona SRCYN031.80 100370	2001 - 1 full suite 2002 - 2 full + 1 partial suite	No exceedances					
	Summary Row A&Wc Inconclusive FC Attaining FBC Attaining DWS Attaining Agl Attaining Agl Attaining	2001 - 2002 4 sampling events	No exceedances					ADEQ collected 4 samples in 2001- 2002. Assessed as "attaining some uses" and placed on the Planning List due to a fish kill related to the Rodeo-Chediski Fire in 2002. Further monitoring is needed to determine long-term negative impacts from the fire.
Cherry Creek tributary at 34 05 09 / 110 56 04 - Salt River AZ15060103-015B A&Ww, FC, FBC, AgL, AgL	ADEQ Ambient Monitoring 50 meters upstream road SRCHE023.90 101323	2001 - 1 full suite 2002 - 2 full + 1 partial suite	No exceedances					
	ADEQ Ambient Monitoring Upstream Road #203 SRCHE003.51 100347	2001 - 1 full suite 2002 - 3 full suites	No exceedances					
	Summary Row A&Ww Attaining FC Attaining FBC Attaining Agl Attaining Agl Attaining	2001 - 2002 8 samples 7 sampling events	No exceedances					ADEQ collected 8 samples at 2 sites in 2001-2002. Assessed as "attaining all uses."
Christopher Creek headwaters - Tonto Creek AZ15060105-353 A&Wc, FC, FBC, AgL, AgL	ADEQ TMDL Program Upstream of recreation area SRCRS006.04 101027	2000 - 3 partial suites 2002 - 6 field + nutrients	No exceedances					

TABLE 15. SALT WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
	ADEQ TMDL Program Downstream of recreation SRCRS005.70 101028	2000 - 3 partial suites 2002 - 6 field + nutrients	No exceedances					
	ADEQ TMDL Program Above Christopher & Hwy 260 SRCRS004.47 101029	2000 - 3 partial suites 2002 - 6 field + nutrients	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.7 - 9.7 (88 - 116%)	1 of 9		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.
	ADEQ TMDL Program By cross-section cut SRCRS003.56 101030	2000 - 3 partial suites 2002 - 4 field + nutrients	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.5 - 10.4 (79 - 107%)	2 of 7		
			<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	7 - 260	1 of 3		
	ADEQ TMDL Program Above Christopher Cr. Camp and below Hunter Creek SRCRS002.85 101031	2000 - 3 partial suites 2002 - 2 field + nutrients	Turbidity (former standard) NTU	10 (A&Wc)	2 - 13	1 of 5		
	ADEQ TMDL Program Below Christopher Cr. Camp, above Boy Scout Ranch SRCRS002.26 101032	2000 - 3 partial suites 2002 - 2 field + nutrients	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	5.8 - 9.4 (84 - 108%)	1 of 5		
			Turbidity (former standard) NTU	10 (A&Wc)	4 - 14	1 of 4		
	ADEQ TMDL Program Near top of Box Canyon, below Boy Scout Camp SRCRS001.49	2000 - 1 <i>Escherichia coli</i>	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	238	1 of 1		
	ADEQ TMDL Program Near top of Box Canyon, below Boy Scout Camp SRCRS001.36	2000 - 1 <i>Escherichia coli</i>	No exceedances					
	ADEQ TMDL Program At top of Box Canyon, Below Boy Scout Ranch SRCRS001.24 101033	2000 - 3 partial suites 2002 - 3 field + nutrients	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	1 - 689	2 of 3		One occurred during a storm flow.
			Turbidity (former standard) NTU	10 (A&Wc)	9 - 89	1 of 5		
	ADEQ TMDL Program Box Canyon pools SRCRS001.23 - 1.18	2000 - 1 <i>Escherichia coli</i>	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	133 - 501	1 of 1		
	ADEQ Ambient Monitoring Downstream of Box Canyon SRCRS000.18 100367	1999 - 1 nutrient suite 2001 - 1 partial suite 2002 - 3 full suites	Turbidity (former standard) NTU	10 (A&Wc)	2 - 30	2 of 4		

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STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	ADEQ TMDL Program Upstream of Tonto Creek, downstream of Box Canyon SRCRS000.08 101034	2000 - 3 partial suites 2002 - 3 field + nutrients	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.3 - 10.8 (82 - 105%)	2 of 6		
			Turbidity (former standard) NTU	10 (A&Wc)	11 - 26	4 of 5		
	Summary Row A&Wc Inconclusive FC Attaining FBC Not attaining Agl Attaining AgL Attaining	1999 - 2002 64 samples 7 sample events	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	5.8 - 11.2 (79-116%)	5 of 54	Attaining	ADEQ collected 64 samples at 12 sites in 1999-2002. Assessed as "not attaining" due to <i>Escherichia coli</i> exceedances. <i>E. coli</i> TMDL approved in 2004. Placed on the Planning list for TMDL follow-up monitoring. Reach was on the 2002 303(d) List due to turbidity. The Aquatic and Wildlife use is assessed as "Inconclusive" and placed on the Planning List due to exceedances of the former turbidity standard. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.
			<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	1 - 689	2 of 7 events (In 2000)	Not attaining	
			Turbidity (former standard) NTU	10 (A&Wc)	<1 - 89	9 of 54	Inconclusive (see comment)	
Coon Creek Unnamed tributary at 33 46 42 / 110 54 25 - Salt River AZ15060103-039B A&Ww, FC, FBC, AgL	ADEQ Ambient Monitoring At Forest Service Road 203 Near Roosevelt Lake SRCOO001.73 100379	2001 - 1 full suite 2002 - 3 full suites	No exceedances					
	Summary Row A&Ww Attaining FC Attaining FBC Attaining AgL Attaining	2001 - 2002 4 sampling events	No exceedances					ADEQ collected 4 samples in 2001-2002. Assessed as "attaining all uses."
Cottonwood Canyon headwaters - Pinto Creek AZ15060103-891 A&We, PBC (tributary rule)	BHP Mining - NPDES MG2-8b Below Cottonwood Tailings	2002 - 2 field + metals	No exceedances					
	Summary Row A&We Inconclusive PBC Inconclusive	2002 2 sampling events	No exceedances					Insufficient monitoring data to assess.
Deer Creek headwaters - Rye Creek AZ15060105-018 A&Wc, FC, FBC (tributary rule)	ADEQ Biocriteria Program At Mazatzal Wilderness SRD4E003.91 100531	2002 - 3 full suites	No exceedances					
	Summary Row A&Wc Attaining FC Attaining FBC Attaining	2002 3 sampling events	No exceedances					ADEQ collected 3 samples in 2002. Assessed as "attaining all uses."
Fish Creek headwaters - Black River AZ15060101-032 A&Wc, FC, FBC, Agl, AgL	ADEQ Biocriteria Program Near Bear Wallow Creek Wilderness SRFIS002.53 100553	1998 - 1 partial suite	Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	33	1 of 1		Lab reporting limits for dissolved copper and zinc too high to use results for assessment.
				varies by hardness (A&Wc chronic)	33	1 of 1		

TABLE 15. SALT WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	ADEQ Ambient Monitoring Above Black River SRFIS000.01 101200	2001 - 1 full suite 2002 - 2 full suites	No exceedances					
	Summary Row A&Wc Inconclusive FC Attaining FBC Inconclusive AgI Attaining AgL Attaining	1998 - 2002 4 sampling events	Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	<10 - 33	1 of 1 event (In 1998)	Inconclusive	ADEQ collected 4 samples at 2 sites in 1998-2002. Assessed as "attaining some uses" and placed on the Planning List due to copper exceedance and missing core parameters: <i>Escherichia coli</i> , dissolved metals (copper and zinc).
				varies by hardness (A&Wc chronic)	<10 - 33	1 of 1 event	Inconclusive	
Gibson Mine Tributary headwaters - Pinto Creek AZ15060103-887 A&Ww, FC, FBC (tributary rule)	ADEQ TMDL Program Above Pinto Creek SRGIM000.15 101071	2000 - 1 partial suite 2001 - 4 partial suites	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	2100 - 5900	5 of 5		
				varies by hardness (A&Ww chronic)	2100 - 5900	5 of 5		
			Copper (total) µg/L	1300 (FBC)	2100 - 5900	5 of 5		
			pH (low) SU	6.5 - 9.0 (A&Ww, FBC)	5.5 - 6.5	1 of 4		
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	96.0	1 of 1		
				varies by hardness (A&Ww chronic)	96.0	1 of 1		
	Summary Row A&Ww Not attaining FC Inconclusive FBC Inconclusive	2000 - 2001 5 sampling events	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	2100 - 5900	5 of 5 samples 5 of 5 events (In 2000-2001)	Not attaining	ADEQ collected 5 samples at 2 sites in 2000-2001. Copper loadings for this tributary were addressed in the Pinto Creek TMDL approved by EPA in 2001. Assessed as "not attaining" due to copper exceedances. Placed on the Planning List for TMDL follow-up monitoring, pH and zinc exceedances, and missing core parameters: <i>Escherichia coli</i> , turbidity/SSC, dissolved metals (cadmium and zinc), and total mercury. Monitoring for a phase II copper TMDL is ongoing.
				varies by hardness (A&Ww chronic)	2100 - 5900	5 of 5 samples 5 of 5 events	Not attaining	
			Copper (total) µg/L	1300 (FBC)	2100 - 5900	5 of 5	Not attaining	
			pH (low) SU	6.5 - 9.0 (A&Ww, FBC)	6.49	1 of 4	Inconclusive	
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	96.0	1 of 1 event	Inconclusive	
				varies by hardness (A&Ww chronic)	96.0	1 of 1 event	Inconclusive	
Gold Gulch Canyon headwaters - Pinto Creek AZ15060103-894 A&Ww, PBC (tributary rule)	BHP Mining — NPDES Below Gold Gulch Weir MG1-12b	2002 - 1 field + metals	No exceedances					
	Summary Row A&Ww Inconclusive PBC Inconclusive	2002 1 sampling event	No exceedances					Insufficient monitoring data to assess.

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STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
Greenback Creek headwaters - Tonto Creek AZ15060105-005 A&Ww, FC, FBC, AgL	ADEQ Ambient Monitoring Below Conway Ranch SRGRE005.74 101221	2001 - 1 full suite 2002 - 2 full suites	No exceedances					
	Summary Row A&Ww Attaining FC Attaining FBC Attaining AgL Attaining	2001 - 2002 3 sampling events	No exceedances					ADEQ collected 3 samples in 2001-2002. Assessed as "attaining all uses."
Haigler Creek headwaters - unnamed reach at 34 12 23.1 / 111 00 11 AZ15060105-012A A&Wc, FC, FBC, Agl, AgL	ADEQ Ambient Monitoring Near Boy Scout Camp SRHAG004.41 100372	2001 - 1 full suite 2002 - 2 full + 1 partial suite	No exceedances					
	Summary Row A&Wc Attaining FC Attaining FBC Attaining Agl Attaining AgL Attaining	2001 - 2002 4 sampling events	No exceedances					ADEQ collected 4 samples in 2001-2002. Assessed as "attaining all uses."
Haunted Canyon headwaters - Pinto Creek AZ15060103-879 A&Ww, FC, FBC (tributary rule)	ADEQ Ambient Monitoring Below Powers Gulch SRHNC002.41 101131	2000 - 1 partial suite 2001 - 1 full suite 2002 - 3 full suites	Dissolved oxygen mg/L	6.0 (90% saturation) (A&Ww)	5.5 - 8.6 (68.9 - 106.3%)	1 of 5		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.
	ADEQ TMDL Program At Carota Weir HC-4 SRPNT002.29 101072	2000 - 2 partial suites 2001 - 2 field + copper	No exceedances					
	Summary Row A&Ww Attaining FC Attaining FBC Attaining	2000 - 2002 9 samples 8 sampling events	No exceedances					ADEQ collected 9 samples at 2 sites in 2000-2002. Assessed as "attaining all uses."
Hay Creek headwaters - West Fork Black River AZ15060101-353 A&Wc, FC, FBC, AgL Unique Water	ADEQ Ambient Monitoring Above West Fork Black River SRHAY000.02 101299	2001 - 1 full suite 2002 - 1 full suite	No exceedances					Lab reporting limits for dissolved cadmium, copper, and zinc samples were too high to use results for assessment.
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	2001 - 2002 2 sampling events	No exceedances					Insufficient monitoring data to assess.
Miller Springs Canyon headwaters - Pinto Creek AZ15060103-892 A&Ww, FC, FBC (tributary rule)	BHP Mining MPC-1b Below Gold Gulch Weir	2000 - 1 field + metals 2001 - 4 field + metals 2002 - 3 field + metals	Selenium µg/L	2.0 (A&Ww chronic)	<5 - 3.7	4 of 4		Lab reporting limits for 4 additional selenium samples were too high to use results for assessment.
			Turbidity (former standard) NTU	50 (A&Ww)	4 - 95	1 of 8		

TABLE 15. SALT WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive	2000 - 2002 8 sampling events	Selenium µg/L	2.0 (A&Ww chronic)	<5 - 3.7	4 of 4	Inconclusive* (see comment)	BHP collected 8 samples in 2000 - 2002. Assessed as "Inconclusive" and placed on the Planning List due to selenium exceedances and missing core parameters: total mercury, dissolved oxygen, and <i>Escherichia coli</i> . * BHP investigation indicates that selenium exceedances may be a laboratory method providing false positive results. See comment in Pinto Creek. Also placed on the Planning List due to exceedance of the former turbidity standard. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.
			Turbidity (former standard) NTU	50 (A&Ww)	4 - 95	1 of 8	Inconclusive	
Pinal Creek Jesse Lane - Salt River AZ15060103-280D A&Ww, FBC, FC, AgL (After groundwater treatment plant installed in May 2001)	USGS Special Investigation At Setka Ranch SRPNL005.78 101491	After May 2001 - 3 partial suites 2002 - 4 partial suites	No exceedances					Low dissolved oxygen due to naturally occurring ground water upwelling and low flow conditions, and not anthropogenic causes. Not considered in final assessment.
	Phelps Dodge & Hydro-GeoChem WQARF Monitoring At Pringle SRPNL005.78	After May 2001 - 8 partial suites 2002 - 11 partial suites	pH (low) SU	6.5 - 9.0 (A&Ww, FBC, AgL)	6.2 - 7.7	1 of 19		
	USGS Special Investigation At Site Z4.7 SRPNL005.461 101507	After May 2001 - 1 partial suite	Dissolved oxygen mg/L	6.0 (A&Ww)	3.8	1 of 1		
	USGS Special Investigation At Site Z5 SRPNL005.37 101509	After May 2001 - 2 partial suites 2002 - 1 partial suites	Dissolved oxygen mg/L	6.0 (90% saturation) (A&Ww)	4.2 - 8.0 (20 - 97%)	1 of 3		
	USGS Special Investigation At Site Z5.7 SRPNL005.23 101510	After May 2001 - 3 partial suites 2002 - 4 partial suites	No exceedances					
	USGS Special Investigation At Site Z6.2 SRPNL005.17 101511	After May 2001 - 2 partial suites	No exceedances					
	USGS Special Investigation At Site Z7 SRPNL005.05 101513	After May 2001 - 2 partial suites 2002 - 3 partial suites	Dissolved oxygen mg/L	6.0 (A&Ww)	5.5 - 6.0	2 of 5		
	USGS Special Investigation At Site Z8.3 SW SRPNL004.96 101515	2002 - 2 partial suites	No exceedances					

TABLE 15. SALT WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	USGS Special Investigation At Site Z9A SRPNL004.77 101516	After May 2001 - 3 partial suites 2002 - 4 partial suites	Dissolved oxygen mg/L	6.0 (A&Ww)	5.4 - 7.5	2 of 4		
	USGS Special Investigation At Site JJ15 SRPNL004.36 101518	After May 2001 - 1 partial suite	No exceedances					
	USGS Fixed Station At Inspiration Dam #09498400 SRPNL003.30 101727	After May 2001 - 4 full suites 2002 - 5 full suites	No exceedances					
	Summary Row A summary of exceedances before and after treatments is shown by parameter in the comment column to the right. Only samples taken after the installation of the ground water remediation facility in 2001 are considered for the assessment in the final summary row below.	Beryllium (dissolved) µg/L	5.3 (A&Ww chronic)	Before treatment: <0.5 - 10 After 1999 treatment: <0.5 - 10 After 2001 treatment: 0.6 - <4.8		Before treatment: 5 of 13 After 1999 treatment: 0 of 14 After 2001 treatment: 0 of 7		
		Cadmium (dissolved) µg/L	varies by hardness (A&Ww acute)	Before treatment: <0.5 - 54 After 1999 treatment: <0.5 - 10 After 2001 treatment: <0.5 - 4		Before treatment: 8 of 24 After 1999 treatment: 0 of 19 After 2001 treatment: 0 of 13		
			varies by hardness (A&Ww chronic)			Before treatment: 14 of 24 After 1999 treatment: 0 of 19 After 2001 treatment: 0 of 13		
		Cadmium (total) µg/L	50 (AgL)	Before treatment: <0.5 - 55 After 1999 treatment: <0.5 - 10 After 2001 treatment: <0.5 - <0.1		Before treatment: 1 of 48 After 1999 treatment: 0 of 50 After 2001 treatment: 0 of 12		
		Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	Before treatment: <1 - 283 After 1999 treatment: <1 - 70 After 2001 treatment: <1 - <30		Before treatment: 13 of 24 After 1999 treatment: 1 of 20 After 2001 treatment: 0 of 13		
			varies by hardness (A&Ww chronic)			Before treatment: 18 of 24 After 1999 treatment: 1 of 20 After 2001 treatment: 0 of 13		
		Mercury (dissolved) µg/L	0.01 (A&Ww chronic)	Before treatment: <0.1 - 0.1 After 1999 treatment: <0.1 After 2001 treatment: <0.1		Before treatment: 1 of 1 (Sample result exceeding standard was at detection limit. Reporting limit too high on 9 other samples.) After 1999 treatment: (Reporting limits too high on 7 samples.) After 2001 treatment: (Reporting limits too high on 6 samples.)		
		Nickel (dissolved) µg/L	varies by hardness (A&Ww chronic)	Before treatment: <10 - 1190 After 1999 treatment: <10 - 350 After 2001 treatment: <50 - <90		Before treatment: 21 of 24 After 1999 treatment: 2 of 19 After 2001 treatment: 0 of 13		
		pH (low) SU	6.5 - 9.0 (A&Ww, FBC, AgL)	Before treatment: 5.4 - 8.2 After 1999 treatment: 6.1 - 7.7 After 2001 treatment: 6.2 - 7.7		Before treatment: 52 of 108 After 1999 treatment: 6 of 98 After 2001 treatment: 1 of 59		
	Selenium (total) µg/L	2.0 (A&Ww chronic)	Before treatment: <1 - 8.7 After 1999 treatment: <1 - 1 After 2001 treatment: <1 - 8.7		Before treatment: 1 of 6 After 1999 treatment: 0 of 7 After 2001 treatment: 0 of 6			

TABLE 15. SALT WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	Before treatment: 3 - 1800 After 1999 treatment: 3 - 160 After 2001 treatment: 6 - 30			Before treatment: 18 of 24 After 1999 treatment: 0 of 19 After 2001 treatment: 0 of 13
				varies by hardness (A&Ww chronic)				Before treatment: 18 of 24 After 1999 treatment: 0 of 19 After 2001 treatment: 0 of 13
			Final Summary Row (Pinal Creek), considering only data collected after 2001 treatment initiated					
	A&Ww Attaining FC Attaining FBC Attaining AgL Attaining	May 2001 - 2002 After treatment facility installed 59 total samples 13 sample events	pH (low) SU	6.5 - 9.0 (A&Ww, FBC, AgL)	6.2 - 7.7	1 of 59	Attaining	USGS and Phelps Dodge collected 59 samples at 11 sites after the groundwater treatment plant was installed in May, 2001. The reach is assessed as "attaining all uses" Follow-up monitoring will continue, as post-treatment samples have been collected during a sustained drought.
Pinto Creek headwater - tributary at 33 19 27 / 110 54 56 AZ15060103-018A A&Wc, FC, FBC, Agl, AgL	ADEQ TMDL Program At Simpson Dam SRPNT023.13	2001 - 2 field + copper	No exceedances					
	Summary Row A&Wc Not attaining FC Inconclusive FBC Inconclusive Agl Inconclusive AgL Inconclusive	2001 2 sample events	No exceedances					Copper TMDL completed by EPA in 2001. Reach will remain assessed as "not attaining" until sufficient copper monitoring to show that all uses are meeting copper standards. Insufficient monitoring data to assess.
Pinto Creek tributary at 33 19 27 / 110 54 56 - Ripper Spring AZ15060103-018B A&Ww, FC, FBC, Agl, AgL	ADEQ TMDL Program Above Henderson Ranch Mines SRPNT023.02 101039	2000 - 1 full suite 2001 - 3 field + copper	pH (low) SU	6.5 - 9.0 (A&Ww, FBC, AgL)	6.1 - 7.8	1 of 3		
	ADEQ TMDL Program At Henderson Ranch Mines SRPNT023.00	2001 - 3 field + copper	Copper (dissolved) µg/L	varies by hardness (A&Ww chronic)	15.0 - 22.0	1 of 3		
	ADEQ TMDL Program At TS-2, below Henderson Ranch Mines SRPNT022.92	2001 - 1 field + copper	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	2000	1 of 1		
				varies by hardness (A&Ww chronic)	2000	1 of 1		
			Copper (total) µg/L	500 (Agl)	1900	1 of 1		
				1300 (FBC)	1900	1 of 1		
			pH (low) SU	6.5 - 9.0 (A&Ww, FBC, AgL)	3.1	1 of 1		
				4.5 - 9.0 (Agl)	3.1	1 of 1		

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STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
	ADEQ TMDL Program Below Henderson Ranch Mines SRPNT022.89 101061	2000 - 1 full suite 2001 - 3 field + copper	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	14.0 - 44.0	1 of 4		
				varies by hardness (A&Ww chronic)	14.0 - 44.0	3 of 4		
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	390	1 of 1		
				varies by hardness (A&Ww chronic)	390	1 of 1		
	ADEQ TMDL Program Above Gibson Mine Tributary SRPNT021.31 101062	2000 - 1 full suite 2001 - 3 field + copper	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	15 - 40	3 of 5		
				varies by hardness (A&Ww chronic)	15 - 40	5 of 5		
			pH (low) SU	6.5 - 9.0 (A&Ww, FBC, AgL)	5.9 - 8.4	1 of 4		
	ADEQ TMDL Program Below Gibson Mine Tributary SRPNT021.30 101063	2001 - 1 full suite	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	560	1 of 1		
				varies by hardness (A&Ww chronic)	560	1 of 1		
			Copper (total) µg/L	500 (AgL)	640	1 of 1		
	ADEQ TMDL Program At Old Highway 60 (PC-100) SRPNT020.65 101064	2000 - 1 full suite 2001 - 4 field + copper	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	32 - 920	5 of 5		
				varies by hardness (A&Ww chronic)	32 - 920	5 of 5		
			Copper (total) µg/L	500 (AgL)	82 - 810	1 of 5		
			pH (low) SU	6.5 - 9.0 (A&Ww, FBC, AgL)	5.6 - 7.9	1 of 5		
	ADEQ TMDL Program At Bronx tributary east of main adit (TS-4) SRPNT019.83	2001 - 1 field + copper	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	360	1 of 1		
				varies by hardness (A&Ww chronic)	360	1 of 1		
	ADEQ TMDL Program At BHP 005 NPDES outfall SRPNT019.07	2001 - 1 field + copper	No exceedances					
	ADEQ TMDL Program Above Cactus Breccia SRPNT018.95	2001 - 1 field + copper	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	33	1 of 1		
				varies by hardness (A&Ww chronic)	33	1 of 1		
	ADEQ TMDL Program Below Cactus Breccia SRPNT018.47	2001 - 1 field + copper	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	47	1 of 1		

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			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
				varies by hardness (A&Ww chronic)	47	1 of 1		
	BHP Mining - NPDES AMP1 Above Cottonwood Gulch SRPNT019.41	1999 - 2 field + metals 2000 - 1 field + metals 2001 - 2 field + metals	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	<4.0 - 78	1 of 5		
				varies by hardness (A&Ww chronic)	<4.0 - 78	2 of 5		
			Turbidity (former standard) NTU	50 (A&Ww)	2.4 - 55.1	1 of 5		
	BHP Mining - NPDES AMP2 Above Cottonwood Gulch SRPNT018.91	1999 - 2 field + metals 2000 - 1 field + metals 2001 - 2 field + metals	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	9.0 - 71	1 of 5		
				varies by hardness (A&Ww chronic)	9.0 - 71	2 of 5		
			Selenium (total) µg/L	2.0 (A&Ww chronic)	<1.0 - 3.0	1 of 5		
			Turbidity (former standard) NTU	50 (A&Ww)	0.17 - 75.3	1 of 5		
	BHP Mining - NPDES AMP3 below Cottonwood Gulch SRPNT018.49	1999 - 3 field + metals 2000 - 1 field + metals 2001 - 2 field + metals 2002 - 1 field + metals	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	24 - 78	2 of 7		
				varies by hardness (A&Ww chronic)	24 - 78	4 of 7		
			Selenium (total) µg/L	2.0 (A&Ww chronic)	<1.0 - 4.9	2 of 7		
	BHP Mining - NPDES DW24 Below Miller Springs Gulch SRPNT017.60	1998 - 2 field + metals 1999 - 4 field + metals 2000 - 4 field + metals 2001 - 4 field + metals	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	4.0 - 63	1 of 15		
				varies by hardness (A&Ww chronic)	4.0 - 63	2 of 15		
			Selenium (total) µg/L	2.0 (A&Ww chronic)	<1.0 - 4.4	4 of 12		
	BHP Mining - NPDES PC2UP Below Miller Springs Gulch SRPNT017.13	1998 - 2 field + metals 1999 - 4 field + metals 2000 - 4 field + metals 2001 - 4 field + metals	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	<4.0 - 57	1 of 13		
				varies by hardness (A&Ww chronic)	<4.0 - 57	1 of 13		
			Selenium (total) µg/L	2.0 (A&Ww chronic)	<1.0 - 3.3	2 of 12		
			Turbidity (former standard) NTU	50 (A&Ww)	0.73 - 111.0	1 of 13		

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STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
	ADEQ TMDL Program At USGS Gage Below Haunted Canyon SRPNT016.18 101068	2000 - 2 full suites 2001 - 4 field + 3 copper	Copper (dissolved) µg/L	varies by hardness (A&Ww chronic)	<10 - 44	4 of 5		
				varies by hardness (A&Ww acute)	<10 - 44	3 of 5		
			Turbidity (former standard) NTU	50 (A&Ww)	60.3	1 of 1		
	BHP Mining - NPDES AMP5 Below Gold Gulch Weir & Haunted Canyon	2002 - 1 field + metals	Selenium (total) µg/L	2.0 (A&Ww chronic)	2.5	1 of 1		
	BHP Mining - NPDES AMP4 - AMP4IS Below Gold Gulch Weir & Haunted Canyon SRPNT015.49	1998 - 2 field + metals 1999 - 4 field + metals 2000 - 4 field + metals 2001 - 4 field + metals 2002 - 3 field + metals	Selenium (total) µg/L	2.0 (A&Ww chronic)	<1.0 - 4.0	1 of 16		
			Turbidity (former standard) NTU	50 (A&Ww)	1.3 - 160	4 of 17		
	Summary Row A&Ww Not attaining FC Inconclusive FBC Inconclusive AgI Inconclusive AgL Attaining	1998 - 2002 95 samples 22 sample events	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	<3.0 - 2000	23 of 95 samples 6 of 22 events (In 2000 and 2001)	Not attaining	ADEQ & BHP's consultant collected 95 samples at 19 sites in 1998-2002. A copper TMDL was approved by EPA in 2001. Assessed as "not attaining" due to copper exceedances and placed on the Planning List for TMDL follow-up monitoring, exceedance of the zinc standard, and missing core parameters: <i>Escherichia coli</i> , total boron, and total mercury. *BHP investigated selenium exceedances in its dataset and found that the analytical method may be responsible for false positive laboratory results. Since use of an alternative laboratory analysis method, no further selenium exceedances have occurred. (Changed at all sites by the fall of 2002.)
				varies by hardness (A&Ww chronic)	<3.0 - 2000	34 of 95 samples 9 of 22 events	Not attaining	
			Copper (total) µg/L	500 (AgL)	<4.0 - 1900	3 of 95	Attaining	
				1300 (FBC)	<4.0 - 1900	1 of 95	Attaining	
			pH (low) SU	6.5 - 9.0 (A&Ww, FBC, AgL)	3.1 - 8.7	4 of 87	Attaining	
				4.5 - 9.0 (AgI)	3.1 - 8.7	1 of 87	Attaining	
			Selenium (total) µg/L	2.0 (A&Ww chronic)	<1.0 - 4.9	11 of 57 samples 6 of 17 events	Inconclusive (see comment*)	
			Turbidity (former standard) NTU	50 (A&Ww)	0.2 - 160	8 of 69	Attaining	
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	<4.1 - 390	1 of 69 samples 1 of 22 events (In 2000)	Inconclusive	
				varies by hardness (A&Ww chronic)	<4.1 - 390	1 of 69 samples 1 of 22 events	Inconclusive	
Pinto Creek Ripper Spring Canyon - Roosevelt Lake AZ15060103-018C A&Ww, FC, FBC, AgI, AgL	ADEQ TMDL Program At USGS Gage near Pinto Valley Weir SRPNT011.44 101070	2000 - 2 partial suites 2001 - 4 field + copper	Copper (dissolved) µg/L	varies by hardness (A&Ww chronic)	<10 - 39	2 of 6		

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			PARAMETER UNITS	STANDARD - DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	ADEQ Fixed Station At Henderson Ford West of Globe SRPNT007.13 100346	1998 - 4 full suites 1999 - 3 full suites 2000 - 3 full suites 2001 - 5 full suites 2002 - 3 full suites	Selenium (total) µg/L	2.0 (A&Ww chronic)	<5.0 - 14.0	3 of 3		Lab reporting limits for 15 additional selenium samples were too high to use results for assessment.
			Turbidity (former standard) NTU	50 (A&Ww)	0.3 - 180	2 of 17		
	Summary Row A&Ww Impaired FC Attaining FBC Attaining Agl Attaining AgL Attaining	1998 - 2002 24 sampling events	Copper (dissolved) µg/L	varies by hardness (A&Ww chronic)	<10 - 39	2 of 24 samples 2 of 24 events	Impaired	ADEQ collected 24 samples at 2 sites in 1998-2002. Assessed as "Impaired" due to copper and selenium exceedances. Note that the state laboratory used a different analytical method than the one suspected of causing false positive results for BHP (see comment in above reach).
			Selenium (total) µg/L	2.0 (A&Ww chronic)	<5.0 - 14.0	3 of 3 samples 3 of 3 events	Impaired	
			Turbidity (former standard) NTU	50 (A&Ww)	0.3 - 180	2 of 19	Attaining	
Pinto Creek, West Fork headwaters - Pinto Creek AZ15060103-066 A&Ww, PBC (tributary rule)	ADEQ TMDL Program SRWPN000.01	2001 - 1 field + copper						
	Summary Row A&Ww Inconclusive PBC Inconclusive	2001 1 sampling event	No exceedances				Not assessed	Insufficient monitoring data to assess.
Reservation Creek headwaters - Black River AZ15060101-010 A&Ww, FC, FBC, AgL	ADEQ Biocriteria Program Above Black River SRRES000.30 100629	1998 - 1 partial suite	No exceedances					Lab reporting limits for dissolved cadmium and copper samples were too high to use results for assessment.
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	1998 1 sampling event	No exceedances				Not assessed	Insufficient monitoring data to assess.
Rye Creek headwaters - Tonto Creek AZ15060105-014 A&Ww, FC, FBC, AgL	ADEQ Ambient Monitoring 100 meters above bridge SRRYE000.97 101297	2002 - 4 full suites	Dissolved oxygen mg/L	6.0 (90% saturation) (A&Ww)	2.72 - 7.42 (34.9 - 76.2%)	2 of 4		Low dissolved oxygen due to naturally occurring ground water upwelling and low flow conditions, and not anthropogenic causes. Not considered in final assessment.
	Summary Row A&Ww Attaining FC Attaining FBC Inconclusive AgL Attaining	2002 4 sampling events	No exceedances					ADEQ collected 4 samples in 2002. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameter: <i>Escherichia coli</i> .
Salt River Pinal Creek - Roosevelt Lake AZ15060103-004 A&Ww, FC, FBC, AgL, AgL (Before Rodeo-Chediski Wildfire)	USGS Fixed Station #09498500 Above Roosevelt Lake SRSLR055.31 100745	1998 - 3 full + 5 partial suites 1999 - 5 full + 1 partial suite 2000 - 3 full + 1 partial suite 2001 - 3 full + 1 partial suite 2002 - 2 full suites	Nitrogen (total) mg/L	2.0 (A&Ww)	0.63 - 2.1	1 of 4		
			Turbidity (former standard) NTU	50 (A&Ww)	0.57 - 180	3 of 20		

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			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	(Before wildfire) Summary Row A&Ww Inconclusive FC Attaining FBC Attaining Agl Attaining AgL Attaining	1998 - June 2002 24 samples 24 sampling events	Nitrogen (total) mg/L	2.0 (A&Ww)	0.63 - 2.1	1 of 4	Inconclusive	After wildfire data and final assessment indicated below.
			Turbidity (former standard) NTU	50 (A&Ww)	0.57 - 180	3 of 20	Attaining	
(After Rodeo-Chediski Wildfire)	USGS Fixed Station #09498500 Above Roosevelt Lake SRSLR055.31 100745	2002 - 5 full + 3 partial suites	Arsenic (total) µg/L	50 (FBC)	9 - 127	2 exceed July-Aug 5 attaining after		
			Chromium (total) µg/L	100 (FBC)	<1 - 168	2 exceed July-Aug 4 attaining after		
			Cyanide (total) µg/L	41 (A&Ww acute)	<10 - 120	2 exceed July-Aug 4 attaining after		
				9.7 (A&Ww chronic)	<10 - 120	2 exceed July-Aug 4 attaining after		
			Dissolved Oxygen mg/L	6.0 (A&Ww)	0.1 - 10.3	2 exceed July-Aug 6 attaining after		
			Escherichia coli CFU/100ml	235 (FBC)	18 - 2700	1 exceed July 1 attaining after		
			Lead (total) µg/L	15 (FBC)	<2 - 688	2 exceed July-Aug 4 attaining after		
				100 (Agl)	<2 - 688	2 exceed July-Aug 4 attaining after		
			Manganese (total) µg/L	10,000 (Agl)	20 - 37800	2 exceed July-Aug 5 attaining after		
			Nitrogen (total) mg/L	2.0 (A&Ww)	2.4 - 220	4 exceed July- Sept 1 attaining after		
			Phosphorus (total) mg/L	1.0 (A&Ww)	0.11 - 39	2 exceed July-Aug 4 attaining after		
			Selenium (total) µg/L	2.0 (A&Ww chronic)	<1 - 3	1 exceed July 5 attaining after		
	Univ. of Az Reservoir Study Salt 1 - Above Roosevelt Lake SRSLR055.23	2002 - 2 suites	Suspended Sediment Conc. mg/L	80 (A&Ww geo mean)	101 - 19900	Geo mean: 2002 = 806		Maximum base flow was calculated to be 1480 cfs based on 30 years of flow data.
			Turbidity (former standard) NTU	50 (A&Ww)	2.6 - 51000	5 exceed July- Sept 2 attaining after		
			Turbidity (former standard) NTU	50 (A&Ww)	5.43 - 3000	1 of 2		

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			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	<p><i>(After Wildfire)</i> Summary Row</p> <p>A&Ww Inconclusive FC Attaining FBC Inconclusive Agl Attaining AgL Attaining</p>	<p>After June 2002 10 samples 8 sampling events</p>	Arsenic (total) µg/L	50 (FBC)	9 - 127	2 exceed July- Aug 6 attaining after	Attaining (see comment)	<p>USGS & Univ. of Arizona collected 10 samples at 2 sites after the Rodeo-Chediski Wildfire in June 2002.</p> <p>Many parameters exceeded standards immediately after the Rodeo-Chediski Fire. Arizona's Impaired Water Identification rule indicates that listings should be restricted to parameters where exceedances are persistent, recurring, or seasonal. Sufficient samples have been collected to show that most impairment due to the fire was temporary and therefore not subject to listing.</p> <p>Arizona has been experiencing a significant drought. Routine sampling will continue in this area to determine if there are residual impacts from the fire when precipitation occurs.</p> <p>Reach assessed as "attaining some uses" and placed on the Planning List due to:</p> <p>1. Insufficient <i>Escherichia coli</i> and nitrogen samples following the fire, 2. SSC geometric mean standard exceedance following the wildfire.</p>
			Chromium (total) µg/L	100 (FBC)	<1 - 168	2 exceed July- Aug 5 attaining after	Attaining (see comment)	
			Cyanide (total) µg/L	41 (A&Ww acute)	<10 - 120	2 exceed July- Aug 4 attaining after	Attaining (see comment)	
				9.7 (A&Ww chronic)	<10 - 120	2 exceed July- Aug 4 attaining after	Attaining (see comment)	
			Dissolved Oxygen mg/L	6.0 (A&Ww)	0.1 - 12.7	2 exceed July- Aug 8 attaining after	Attaining (see comment)	
			<i>Escherichia coli</i> CFU/100ml	235 (FBC)	18 - 2700	1 exceed July 1 attaining after	Inconclusive	
			Lead (total) µg/L	15 (FBC)	1 - 688	2 exceed July- Aug 6 attaining after	Attaining (see comment)	
				100 (Agl)	1 - 688	2 exceed July- Aug 6 attaining after	Attaining (see comment)	
			Manganese (total) µg/L	10,000 (Agl)	20 - 37800	2 exceed July- Aug 6 attaining after	Attaining (see comment)	
			Nitrogen (total) mg/L	2.0 (A&Ww)	2.4 - 220	4 exceed July- Sept 1 attaining after	Inconclusive	
			Phosphorus (total) mg/L	1.0 (A&Ww)	0.11 - 39	2 exceed July- Aug 4 attaining after	Attaining (see comment)	
			Selenium (total) µg/L	2.0 (A&Ww chronic)	<1 - 3	1 exceed July 5 attaining after	Attaining (see comment)	
			Suspended Sediment Conc. mg/L	80 (geometric mean) (A&Ww)	101 - 19,900	1 of 1 annual geo. mean	Inconclusive	
			Turbidity (former standard) NTU	50 (A&Ww)	2.8 - 51,000	5 exceed July- Sept 2 attaining after	Attaining (see comment)	

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			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
Salt River Roosevelt Lake - Apache Lake AZ15060106A-024 A&Wc, FC, FBC, DWS, Agl, AgL	Univ. of Az. Reservoir Study Salt 2 Below Roosevelt Lake SRSLR031.45	2002 - 1 Field	No exceedances					
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive	2002 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Salt River Stewart Mountain Dam - Verde River AZ15060106A-003 A&Wc, FC, FBC, DWS, Agl, AgL	SRP Ambient Monitoring Below Stewart Mtn. Dam SRSLR031.94	1998 - 12 partial suites 1999 - 12 partial suites 2000 - 14 partial suites 2001 - 11 partial suites 2002 - 12 partial suites	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	<10 - 26	3 of 62 (All in 1999)		Lab reporting limits for 55 additional total selenium samples were too high to use results for assessment.
	USFS 319(h) Project Site 1 - Saguaro Lake Ranch SRSLR031.89	2001 - 9 <i>Escherichia coli</i> 2002 - 10 <i>Escherichia coli</i>	No exceedances	varies by hardness (A&Ww chronic)	<10 - 26	3 of 62 (All in 1999)		
	AGFD Routine Monitoring Below Stewart Mt. Dam SRSLR031.66	1999 - 1 field + nutrients 2000 - 1 field + nutrients	No exceedances					
	USFS 319(h) Project Site 2 - Blue Point Bridge SRSLR030.28	2001 - 9 <i>Escherichia coli</i> 2002 - 10 <i>Escherichia coli</i>	No exceedances					
	USGS Fixed Station Site #09502000 Below Stewart Mt. Dam SRSLR030.22	1999 - 3 full suites 2000 - 6 full suites 2001 - 5 full suites 2002 - 4 full suites	Dissolved oxygen mg/L	> 7.0 (A&Wc)	4.1 - 12	6 of 18		
	USFS 319(h) Project Site 3 - Bus stop 4 SRSLR028.62	2001 - 9 <i>Escherichia coli</i> 2002 - 10 <i>Escherichia coli</i>	No exceedances					
	USGS Ambient Monitoring Near Coon Bluff SRSLR027.59	1999 - 1 full suite	No exceedances					
	Univ. of Az. Reservoir Study Salt 3 - Above Verde River SRSLR027.28	2002 - 1 field	No exceedances					
	USFS 319(h) Project Site 4 - Phon-D-Sutton Above Verde River SRSLR027.06	2001 - 9 <i>Escherichia coli</i> 2002 - 10 <i>Escherichia coli</i>	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	<2 - 300	2 of 19		

TABLE 15. SALT WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row	1998 - 2002	Copper (dissolved) µg/L	varies by hardness (A&Wc acute)	<1 - 26	3 of 81 events (not exceeded in last 3 years)	Attaining	Multiple agencies collected a total of 147 samples at 9 sites in 1998 - 2002. Assessed as "impaired" due to copper exceedances and low dissolved oxygen. ADEQ assessed the FBC designated use as "inconclusive" rather than "impaired" for the following reasons: 1. One of the two <i>E. coli</i> exceedances was very close to the standard (result is 240, standard is 235). 2. The bacterial lab method provides an estimate of bacterial density (see discussion in Chapter III). 3. The two exceedances represent a small proportion of the total number of samples on this reach (2 of 96 samples, 2 of 40 events).
	A&Wc Impaired FC Attaining FBC Inconclusive DWS Attaining Agl Attaining Agl Attaining	147 samples 102 sampling events		varies by hardness (A&Wc chronic)	<1 - 26	3 of 81 samples 3 of 81 events	Impaired	
			Dissolved oxygen mg/L	> 7.0 (A&Wc)	4.1 - 15.7	6 of 21	Impaired	
			<i>Escherichia coli</i> CFU/100ml	235 (FBC)	1 - 300	2 of 96 samples 2 of 40 events (in 2001 and 2002)	Inconclusive (see comment)	
Snake Creek headwaters - Black River AZ15060101-045 A&Wc, FC, FBC, AgL Unique Water	ADEQ Biocriteria Program Near Bear Wallow Wilderness SRSNK001.19 100643	1998 - 1 partial suite	No exceedances					Lab reporting limits for dissolved copper were too high to use results for assessment.
	ADEQ Ambient Monitoring Above Black River SRSNK000.84 101298	2001 - 1 full suite 2002 - 1 full suite	No exceedances					
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive	1998-2002 3 sampling events	No exceedances					ADEQ collected 3 samples at 2 sites in 1998-2002. Assessed as "inconclusive" and placed on the Planning List due to missing core parameters: <i>Escherichia coli</i> , dissolved metals (copper and zinc), and total metals (mercury, copper and lead).
Spring Creek headwaters - Tonto Creek AZ15060105-010 A&Ww, FC, FBC, AgL	ADEQ Ambient Monitoring West of Young SRSP1006.79 100380	2001 - 1 partial suite 2002 - 2 full + 1 partial suites	No exceedances					
	Summary Row A&Ww Attaining FC Attaining FBC Inconclusive Agl Attaining	2001 - 2002 4 sampling events	No exceedances					ADEQ collected 4 samples in 2001-2002. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameter: <i>Escherichia coli</i> .
Stinky Creek Fort Apache Reservation - West Fork Black River AZ15060101-352A A&Wc, FC, FBC, AgL Unique Water	ADEQ Biocriteria Program Downstream of Road #116 SRST1001.76 100652	1998 - 1 partial suite	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.54 (83%)	1 of 1		Lab reporting limits for dissolved cadmium, copper, and zinc were too high to use results for assessment.
	ADEQ Ambient Above West Fork Black River SRST1000.25 101303	2001 - 1 full suite 2002 - 1 partial suite	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	5.52 - 8.15 (80.8 - 84.4%)	1 of 2		Low dissolved oxygen due to naturally occurring low flow conditions and pooling, and not anthropogenic causes. Not considered in final assessment.

TABLE 15. SALT WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	1998 - 2002 3 sampling events	No exceedances					ADEQ collected 3 samples at 2 sites in 1998-2002. Assessed as "Inconclusive" due to missing core parameters: <i>Escherichia coli</i> , dissolved metals (copper, cadmium, and zinc), and total metals (mercury, copper and lead).
Tonto Creek headwaters - unnamed tributary at 34 18 10 / 111 04 14 AZ15060105-013A A&Wc, FC, FBC, AgL, AgL	ADEQ TMDL Program At headwater spring, Above AGFD Fish Hatchery SRTON073.00 101016	2000 - 3 partial suites 2002 - 6 field + nutrients	No exceedances					
	ADEQ Ambient Monitoring At headwater spring, Below hatchery monitoring point SRTON043.98 100350	1999 - 1 nutrients	No exceedances					
	ADEQ TMDL Program Below AGFD Fish Hatchery Outfall SRTON072.66 101017	2000 - 3 partial suites 2002 - 6 field + nutrients	Nitrogen mg/L	0.5 annual mean (A&Wc)	0.29 - 0.74 (0.64 annual mean)	1 of 1 year (2002)		
	ADEQ Ambient Monitoring Below AGFD Fish Hatchery, North of Kohl's Ranch SRTON043.52 100351	1999 - 1 nutrients 2001 - 1 full suite 2002 - 3 full suites	No exceedances					
	ADEQ TMDL Program Above Baptist Camp and Dick Williams Creek SRTON071.72 101018	2000 - 3 field partial suites 2002 - 6 field + nutrients	No exceedances					
	ADEQ TMDL Program Below Baptist Camp road SRTON070.86 101019	2000 - 3 field, nutrients, + <i>Escherichia coli</i> 2002 - 6 field + nutrients	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.7 - 9.1 (89 - 113%)	1 of 9		
	ADEQ TMDL Program Above Horton Creek SRTON069.87 101020	2000 - 3 partial suites 2002 - 6 field + nutrients	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.4 - 17.1 (86 - 166%)	2 of 9		
			<i>Escherichia coli</i> CFU/100ml	235 (FBC)	12 - 659	1 of 3		
	ADEQ TMDL Program Below Horton Creek SRTON069.80 101021	2000 - 3 partial suites 2002 - 6 field + nutrients	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.5 - 10.3 (86 - 104%)	1 of 9		
			<i>Escherichia coli</i> CFU/100ml	235 (FBC)	33 - 436	1 of 3		
	ADEQ TMDL Program Above USGS gage site SRTON068.97 101629	2000 - 2 <i>Escherichia coli</i>	No exceedances					

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			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
	ADEQ TMDL Program Above Highway 260, USGS gage site SRTON068.95 101022	2000 - 3 partial suites 2002 - 6 field + nutrients	Turbidity (former standard) NTU	10 (A&Wc)	3.42 - 172	3 of 9		
	ADEQ TMDL Program Below Kohls Ranch, Above Tontozona SRTON068.00 101023	2000 - 3 partial suites 2002 - 6 field + nutrients	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	4.9 - 7.8 (60 - 105%)	6 of 9		
			Turbidity (former standard) NTU	10 (A&Wc)	3.3 - 249	3 of 9		
	ADEQ TMDL Program Above Christopher Creek SRTON066.90 101024	2000 - 3 partial suites 2002 - 6 field + nutrients	Turbidity (former standard) NTU	10 (A&Wc)	7.9 - 193	5 of 9		
	ADEQ Fixed Station Below Christopher Creek SRTON038.81 100360	1999 - 3 full suites 2000 - 3 full suites 2001 - 5 full suites 2002 - 4 full suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.3 - 11.6 (77 - 103%)	1 of 14		
			Turbidity (former standard) NTU	10 (A&Wc)	1.4 - 71.8	8 of 14		
	Summary Row A&Wc Impaired FC Attaining FBC Not attaining Agl Attaining Agl Attaining	1999 - 2002 103 samples 15 sampling events	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	4.9 - 17.1 (60 - 166%)	11 of 99	Attaining	ADEQ collected 103 samples at 13 sites in 1999-2002. EPA assessed this reach as "impaired" due to nitrogen exceedance.
			<i>Escherichia coli</i> CFU/100ml	235 (FBC)	<1 - 659	1 of 15 events (in 2000)	Not attaining	<i>Escherichia coli</i> TMDL approved in 2004. Placed on the Planning List for TMDL follow-up monitoring.
			Nitrogen mg/L	0.5 annual mean (A&Wc)	0.29 - 0.74 (0.64 annual mean)	1 of 1 annual mean (2002)	Impaired	Also placed on the Planning List due to exceedances of the former turbidity standard. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.
			Turbidity (former standard) NTU	10 (A&Wc)	1.3 - 249	19 of 99 (19 of 41 below USGS gage)	Inconclusive	
Tonto Creek unnamed tributary at 34 18 10 / 111 04 14 to Haigler Creek AZ15060105-013B A&Ww, FC, FBC, Agl, AgL	ADEQ TMDL Program Above Bear Flats SRTON065.38 101025	2000 - 3 partial suites 2002 - 6 field + nutrients	<i>Escherichia coli</i> CFU/100ml	235 (FBC)	1 - 344	2 of 3		1 <i>Escherichia coli</i> exceedance was related to a storm
			Nitrogen mg/L	2.0 (A&Ww)	0.21 - 2.8	1 of 9		
				0.5 annual mean (A&Ww)	0.21 - 2.8 0.56 annual mean	1 of 1 year (2002)		
			Turbidity (former standard) NTU	50 (A&Ww)	16 - 898	3 of 9		

TABLE 15. SALT WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
	ADEQ Ambient Monitoring Above Bear Flats, South of Kohls Ranch SRTON038.32 100357	2002 - 1 metals suite	No exceedances					Dissolved metals could not be assessed due to lack of water hardness data. Only total metal results were assessed.
	ADEQ TMDL Program Below Bear Flats access road SRTON064.22 101026	2000 - 3 partial suites 2002 - 6 field + nutrients	<i>Escherichia coli</i> CFU/100ml	235 (FBC)	5 - 525	2 of 3		
			Turbidity (former standard) NTU	50 (A&Ww)	19.1 - 119	3 of 9		
	ADEQ Ambient Monitoring Below Bear Flats, south of Kohls Ranch SRTON037.17 100358	2001 - 1 full suite 2002 - 3 full suites	Turbidity (former standard) NTU	50 (A&Ww)	2.4 - 62.7	1 of 4		
	Summary Row A&Ww Impaired FC Attaining FBC Not attaining Agl Attaining AgL Attaining	2000 - 2002 23 samples 13 sampling events	<i>Escherichia coli</i> CFU/100ml	235 (FBC)	1 - 525	3 of 7 samples 2 of 7 events (in 2000)	Not attaining	ADEQ collected 23 samples at 4 sites in 2000 - 2002. EPA assessed this reach as "impaired" due to nitrogen exceedance.
			Nitrogen mg/L	2.0 (A&Ww)	0.21 - 2.8	1 of 20	Attaining	<i>Escherichia coli</i> TMDL approved in 2004. Placed on the Planning List for <i>Escherichia coli</i> TMDL follow-up monitoring.
				0.5 annual mean (A&Ww)	0.21 - 2.8 (0.56 annual mean)	1 of 1 year (in 2002)	Impaired	Also placed on the Planning List due to exceedances of the former turbidity standard. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.
Tonto Creek Rye Creek - Gun Creek AZ15060105-008 A&Ww, FC, FBC, Agl, AgL	ADEQ Fixed Station Above USGS gage Near Jakes Corner SRTON015.88 100349	1998 - 4 full suites 1999 - 3 full suites 2000 - 3 full suites 2001 - 5 full suites 2002 - 2 partial + 1 full suite	No exceedances					
	Summary Row A&Ww Attaining FC Attaining FBC Attaining Agl Attaining AgL Attaining	1998 - 2002 18 sampling events	No exceedances					ADEQ collected 18 samples in 1998-2002. Assessed as "attaining all uses."

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STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
LAKE MONITORING DATA								
Apache Lake AZL15060106A-0070 A&Wc, FC, FBC, DWS, Agl, AgL	AGFD Routine Monitoring SRAPA - A1 (site A1)	2001- 4 field + nutrients	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	2.3 - 8.9	2 of 4		Some nitrogen and phosphorus samples were obtained, but were not composite samples at 1, 2 & 5 meters depth as required for nutrient standards for this lake (R18-11-109.G Footnote 6). Therefore, these nutrient samples were not considered in the final assessment and do not count as core parameter samples.
	AGFD Routine Monitoring SRAPA - A2 (site A2)	2001- 5 field + nutrients	No exceedances					
	AGFD Routine Monitoring SRAPA - A3 (site A3)	2001- 5 field + nutrients	No exceedances					
	AGFD Routine Monitoring SRAPA - BC (Burnt Corral)	1999 - 4 partial suites	No exceedances					
	AGFD Routine Monitoring SRAPA - A (dam site)	1999 - 4 partial suites	No exceedances					
	AGFD Routine Monitoring SRAPA - TR (Turtle Rock)	1999 - 3 partial suites	No exceedances					
	AGFD Urban Lakes Study SRAPA - A (deepest)	2002 - 2 partial suites	No exceedances					
	AGFD Urban Lakes Study SRAPA - B (mid lake)	2002 - 1 partial suites	No exceedances					
	AGFD Urban Lakes Study SRAPA (Site C)	2002 - 1 field	No exceedances					
	Univ. of Az. Reservoir Study SRAPA - A (Site A)	1999 - 4 partial suites 2000 - 6 partial suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	5.7 - 10.7 (67 - 120%)	1 of 4		
			pH (high) SU	6.5 - 9.0 (A&Wc, FBC, AgL AgL, DWS)	7.8 - 9.3	1 of 12		
	Univ. of Az. Reservoir Study SRAPA - B (Site B)	1999 - 4 partial suites 2000 - 8 partial suites	No exceedances					
	Univ. of Az. Reservoir Study SRAPA - C (Site C)	1999 - 4 field 2000 - 8 partial suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	1.2 - 8.9 (12 - 84%)	4 of 5		
	ADEQ Lakes Program SRAPA - A (deepest) 100997	2000 - 1 suite 2001 - 1 field + VOCs	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	5.0 - 15.5 (60 - 182%)	1 of 2		Field staff documented recent lake turnover which caused the low dissolved oxygen and not anthropogenic causes. Therefore, this naturally occurring low dissolved oxygen was not included in the final assessment.
	ADEQ Lakes Program SRAPA-MAR (marina) 100998	2000 - 1 suite 2001 - 1 field + VOCs	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.6 - 14.8 (79 - 182%)	1 of 2		
ADEQ Lakes Program SRAPA-E 100008	2000 - 1 suite	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.4 (77%)	1 of 1			
Summary Row	1998 - 2002	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	1.1 - 15.5 (12-120%)	7 of 45	Inconclusive	Univ. of Arizona's Reservoir Monitoring Project, AGFD, and ADEQ collected a total of 70 samples during 24 sampling events in 1998-2002. Assessed as "attaining some uses" and placed on the Planning List due to low dissolved oxygen and missing core parameters: <i>Escherichia coli</i> , phosphorus, nitrogen, and fluoride.	
A&Wc Inconclusive FC Attaining FBC Inconclusive DWS Inconclusive Agl Attaining AgL Attaining	70 samples 24 sampling events	pH (high) SU	6.5 - 9.0 (A&Wc, FBC, DWS, AgL, Agl)	7.4 - 9.3	1 of 70	Attaining		
Big Lake AZL15060101-0160 A&Wc, FC, FBC, DWS, Agl, AgL	ADEQ Lakes Program SRBIG - A (dam site) 101322	2001 - 1 partial suite	No exceedances					
	ADEQ Lakes Program SRBIG - B (Mid lake) 101355	2002 - 2 partial suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.6 - 10.1 (68 - 85%)	1 of 2		

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			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	ADEQ Lakes Program SRBIG - D 100013	2002 - 1 field	No exceedances					
	ADEQ Lakes Program SRBIG - SH (shoreline) 101358	2002 - 1 <i>Escherichia coli</i>	No exceedances					
	ADEQ Lakes Program SRBIG - SBR (west of floating dock) 101359	2002 - 1 <i>Escherichia coli</i>	No exceedances					
	Summary Row A&Wc Inconclusive FC Attaining FBC Inconclusive DWS Attaining Agl Attaining AgL Attaining	2001 - 2002 6 total samples 3 sampling events	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.6 - 10.6	1 of 4	Inconclusive	ADEQ collected 6 samples during 3 sampling events in 2001-2002. Assessed as "attaining some uses" and added to the Planning List due to low dissolved oxygen and missing core parameters: <i>Escherichia coli</i> and dissolved cadmium.
Canyon Lake AZL15060106A-0250 A&Wc, FC, FBC, DWS, Agl, AgL	Univ. of Az. Reservoir Study SRCAN - A (deepest)	1999 - 4 partial suites 2000 - 8 partial suites	No exceedances					Some nitrogen and phosphorus samples were obtained, but were not composite samples at 1, 2 & 5 meters depth as required for nutrient standards for this lake (R18-11-109.G Footnote 6). Therefore, these nutrient samples were not considered in the final assessment and do not count as core parameter samples.
	Univ. of Az. Reservoir Study SRCAN - B (mid lake)	1999 - 4 partial suites 2000 - 8 partial suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.7 - 10.7 (87 - 100%)	1 of 7		
	Univ. of Az. Reservoir Study SRCAN - C (site C)	1999 - 4 partial suites 2000 - 8 partial suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	2.1 - 9.8 (24 - 89%)	3 of 5		
	AGFD Urban Lakes Program SRCAN - A (site A)	2002 - 2 partial suites	Ammonia mg/L	varies by pH & temperature (A&Wc chronic)	0.07 - 0.47	1 of 2		
	AGFD Urban Lakes Program SRCAN - B (site B)	2002 - 2 partial suites	No exceedances					
	AGFD Routine Monitoring SRCAN - C1 (site C1)	2001 - 5 partial suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	2.2 - 8.5	2 of 5		
	AGFD Routine Monitoring SRCAN - C2 (site C2)	2001 - 5 partial suites	No exceedances					
	AGFD Routine Monitoring SRCAN - C3 (site C3)	2001 - 5 partial suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.7 - 10.2	1 of 5		
	AGFD Routine Monitoring SRCAN - Mid Basin	1998 - 1 partial suite	No exceedances					
	AGFD Routine Monitoring SRCAN - Up Lake	1998 - 1 partial suite	No exceedances					
	Summary Row A&Wc Impaired FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive AgL Inconclusive	1999-2000 49 samples 20 sampling events	Ammonia mg/L	varies by pH & temperature (A&Wc chronic)	0.1 - 0.47	1 of 44 1 of 20 events	Inconclusive	Univ. of Arizona's Reservoir Monitoring Project and AGFD collected 49 samples during 20 sampling events in 1998-2002. Assessed as "Impaired" due to low dissolved oxygen.
			Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	2.2 - 10.7	7 of 35	Impaired	Also on the Planning List due to ammonia exceedance and missing core parameters: <i>Escherichia coli</i> , total fluoride, total boron, nitrate, nitrogen, phosphorus, total metals (mercury, arsenic, chromium, lead, and copper), and dissolved metals (copper, cadmium, and zinc).
Crescent Lake AZL15060101-0420 A&Wc, FC, FBC, Agl, AgL	ADEQ Lakes Program SRCRE - B (mid lake) 100993	1999 - 1 partial suite 2001 - 1 partial suite 2002 - 2 full suites	pH (high) SU	6.5 - 9.0 (A&Wc, FBC, AgL, Agl)	7.6 - 9.8	2 of 4		Lab reporting limits for copper and cadmium were too high to use results for assessment.

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			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
			Nitrogen mg/L	2.0 (A&Wc)	1.56 - 2.05	1 of 4		
	ADEQ Lakes Program SRCRE - BR (boat ramp) 101320	2002 - 2 <i>Escherichia coli</i> (same date as at B)	No exceedances					
	AGFD Lakes Program SRCRE - Mid Lake 101320	1998 - 2 partial suite 2001 - 1 partial suite	No exceedances					
	AGFD Lakes Program SRCRE - Dam Site 101320	1998 - 2 partial suite	pH (high) SU	6.5 - 9.0 (A&Wc, FBC, Agl, AgL)	8.5 - 9.6	1 of 2		
	Summary Row A&Wc Impaired FC Attaining FBC Impaired Agl Impaired AgL Impaired	1998 - 2002 11 samples 8 sampling events	pH (high) SU	6.5 - 9.0 (A&Wc, FBC, Agl, AgL)	7.6 - 9.8	3 of 9	Inconclusive (Impaired)	ADEQ and AGFD collected 11 samples during from 4 sites in 1998-2002. Assessed as "Impaired" due to pH exceedances. *EPA placed this reach on the 2002 303(d) List due to pH exceedances in 5 of 7 samples. Once listed, the surface water cannot be delisted until a TMDL is complete or data indicate that designated uses are being attained.
			Nitrogen (total) mg/L	2.0 (A&Wc)	1.00 - 2.05	1 of 9	Inconclusive	On the Planning List due to: 1. Total nitrogen exceedances, 2. Missing core parameters: <i>Escherichia coli</i> , turbidity, and dissolved metals (copper and cadmium) 3. Recurrent fish kills, the most recent occurring in 1998. Fish kills may be evidence of a narrative standard violation.
Roosevelt Lake AZL15060103-1240 A&Ww, FC, FBC, DWS, Agl, AgL (Before Rodeo-Chediski Wildfire)	Univ. of Az. Reservoir Study SRROO - A (deepest)	1999 - 4 partial suites 2000 - 8 partial suites	Dissolved oxygen mg/L	6.0 (90% saturation) (A&Ww)	4.9 - 10.5	1 of 4		Some nitrogen and phosphorus samples were obtained, but were not composite samples at 1, 2 & 5 meters depth as required for nutrient standards for this lake (R18-11-109.G Footnote 6). Therefore, these nutrient samples were not considered in the final assessment and do not count as core parameter samples.
	Univ. of Az. Reservoir Study SRROO - B (mid lake)	1999 - 4 partial suites 2000 - 6 partial suites	Turbidity (former standard) NTU	25 (A&Ww)	2.1 - 112	5 of 10		
	Univ. of Az. Reservoir Study SRROO - B2	1999 - 4 partial suites 2000 - 8 partial suites	Turbidity (former standard) NTU	25 (A&Ww)	2.0 - 83	4 of 12		
	Univ. of Az. Reservoir Study SRROO - C	2000 - 1 partial suite	Turbidity (former standard) NTU	25 (A&Ww)	44.7	1 of 1		
	Univ. of Az. Reservoir Study SRROO - C2	1999 - 1 partial suite	No exceedances					
	AGFD Urban Lakes Program SRROO - A (deepest)	2002 - 2 partial suites	Manganese (total) µg/L	980 (DWS)	220 - 1040	1 of 2		
	AGFD Urban Lakes Program SRROO - B (mid lake)	2002 - 2 partial suites	Turbidity (former standard) NTU	25 (A&Ww)	10.9 - 40.8	1 of 2		
	AGFD Urban Lakes Program SRROO - C	2002 - 2 partial suites	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	4.2 - 11.3	1 of 2		
	AGFD Routine Monitoring SRROO (Windy Hill site)	2000 - 5 partial suites 2002 - 1 partial suite	No exceedances					

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			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
	AGFD Routine Monitoring Between Hill & Dam SRROO	2002 - 1 partial suite	Copper (total) µg/L	500 (AgL)	715	1 of 1		
	AGFD Routine Monitoring SRROO (R3 site)	2001 - 5 partial suites	No exceedances					
	AGFD Routine Monitoring SRROO (Salt River arm)	2000 - 8 partial suites 2001 - 3 partial suites	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	5.6 - 13.2	1 of 12		
	AGFD Routine Monitoring SRROO (dam site)	2000 - 10 partial suites 2001 - 4 partial suites 2002 - 2 partial suites	No exceedances					
	AGFD Routine Monitoring SRROO (Tonto Creek arm)	2000 - 9 partial suites 2001 - 3 partial suites 2002 - 1 partial suite	No exceedances					
	ADEQ Clean Lakes Program SRROO - A (deepest) 100075	2000 - 1 partial suite 2001 - 1 partial suite	No exceedances					
	ADEQ Clean Lakes Program SRROO - B (mid lake) 100076	2000 - 1 partial suite	No exceedances					
	ADEQ Clean Lakes Program SRROO - C 100077	2000 - 1 partial suite 2001 - 1 partial suite	No exceedances					
	(Before Rodeo- Chediski Fire) Summary Row A&Ww Inconclusive FC Attaining FBC Inconclusive DWS Attaining AgL Attaining AgL Attaining	1999 - 2002 95 samples 30 sampling events	Copper (total) µg/L	500 (AgL)	5 - 715	1 of 21	Attaining	Univ. of Arizona Reservoir Monitoring Project, ADEQ, & AGFD collected a total of 95 samples at 17 sites in 1998 - 2002. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters and exceedances of the former turbidity standard. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring. Missing core parameters: <i>Escherichia coli</i> , total nitrogen, and total phosphorus.
		Final assessment	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	4.2 - 12.4	3 of 78	Attaining	
			Manganese (total) µg/L	980 (DWS)	5 - 1040	1 of 47	Attaining	
			Turbidity (former standard) NTU	25 (A&Ww)	0.05 - 112	11 of 46	Inconclusive (see comment)	
Roosevelt Lake AZL15060103-1240 A&Ww, FC, FBC, DWS, AgL, AgL (After Rodeo-Chediski Wildfire)	AGFD Routine Monitoring Salt Arm Inflow/Salt Mouth SRROO - AGFD	2002 - 2 suites	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	5.4	1 of 1		These AGFD samples were assessed separately to show the impacts of the Rodeo-Chediski Wildfire in June 2002 on Roosevelt Lake. Two samples were obtained after the fire, July 19, 2002 and October 8, 2002. Exceedances occurred only in the July sampling event.
			Lead (total) µg/L	15 (FBC, DWS)	<10 - 35	1 of 2		
			Manganese (total) µg/L	98 (DWS)	84 - 1680	1 of 2		
			Nitrogen (total) mg/L	1.00 (A&Ww)	0.58 - 5.31	1 of 2		
			Phosphorus (total) mg/L	0.6 (A&Ww)	0.10 - 1.67	1 of 2		

TABLE 15. SALT WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row (Post Rodeo-Chediski Fire)	July & October 2002 2 total samples 2 sample events (After Rodeo-Chediski Wildfire in June 2002. Not used in assessment. See comments.)	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	5.4	1 of 1	Not assessed (see comment)	AGFD collected 2 samples after the Rodeo-Chediski Wildfire near the Salt River mouth to Roosevelt Lake. Several parameters exceeded standards immediately after the Rodeo-Chediski Fire. Arizona's Impaired Water Identification rule indicates that listings should be restricted to parameters where exceedances are persistent, recurring, or seasonal. Sufficient samples have been collected in the Salt River above the Lake (see Salt River monitoring) to show that most impairment due to the fire was temporary and therefore not subject to listing. Roosevelt Lake will remain on the Planning List for more monitoring to determine whether there are any residual impacts due to the fire. Note that no turbidity or SSC samples were taken following the fire.
			Lead (total) µg/L	15 (FBC, DWS)	<10 - 35	1 of 2	Not assessed (see comment)	
			Manganese (total) µg/L	98 (DWS)	84 - 1680	1 of 2	Not assessed (see comment)	
			Nitrogen (total) mg/L	1.00 (A&Ww)	0.58 - 5.31	1 of 2	Not assessed (see comment)	
			Phosphorus (total) mg/L	0.6 (A&Ww)	0.10 - 1.67	1 of 2	Not assessed (see comment)	
Seguaro Lake AZL15060106A-1290 A&Wc, FC, FBC, DWS, Agl, Agl	Univ. of Az. Reservoir Study SRSAG - A	1999 - 4 partial suites 2000 - 8 partial suites	No exceedances					Some nitrogen and phosphorus samples were obtained, but were not composite samples at 1, 2 & 5 meters depth as required for nutrient standards for this lake (R18-11-109.G Footnote 6). Therefore, these nutrient samples were not considered in the final assessment and do not count as core parameter samples.
	Univ. of Az. Reservoir Study SRSAG - B	1999 - 4 partial suites 2000 - 8 partial suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.3 - 10.5	1 of 4		
			pH (high) SU	8.5 - 9.0 (A&Wc, FBC, DWS, Agl, Agl)	7.9 - 9.3	2 of 12		
	Univ. of Az. Reservoir Study SRSAG - C	1999 - 4 field 2000 - 8 partial suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	5.2 - 11.2	2 of 5		
	AGFD Urban Lakes Study SRSAG - A	2002 - 2 partial suites	No exceedances					
	AGFD Urban Lakes Study SRSAG - B	2002 - 2 partial suites	No exceedances					
	AGFD Routine Monitoring SRSAG - UL (up lake)	1998 - 1 field	No exceedances					
	AGFD Routine Monitoring SRSAG - S1	2001 - 5 partial suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	3.4 - 9.3	1 of 5		
	AGFD Routine Monitoring SRSAG - S2	2001 - 5 partial suites	No exceedances					
	AGFD Routine Monitoring SRSAG - S3	2001 - 5 partial suites	No exceedances					
	AGFD Routine Monitoring SRSAG - A (dam site)	1998 - 1 field 1999 - 10 partial suites	No exceedances					
	AGFD Routine Monitoring SRSAG (Perrigrin Cove)	1998 - 1 field 1999 - 10 partial suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.2 - 10 (76 - 110%)	1 of 10		Low dissolved oxygen attributed to natural lake turnover of the water column in October 1999, a naturally-occurring condition. Not used in the final assessment.

TABLE 15. SALT WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
	AGFD Routine Monitoring SRSAG - MF (below Mormon Flat Dam)	1998 - 1 field 1999 - 1 partial suite 2001 - 1 partial suite	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6 - 8 (70 - 103%)	2 of 3		
			pH (high) SU	6.5 - 9.0 (A&Wc, FBC, DWS, Agl, AgL)	8.0 - 9.6	1 of 3		
	AGFD Routine Monitoring Above Bagley Flats SRSAG	1999 - 7 partial suites 2001 - 3 partial suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.1 - 9.9 (73 - 107%)	1 of 11		
	ADEQ Lakes Program SRSAG-BJ 100081	1999 - 1 partial suite 2001 - 4 partial suites 2002 - 1 VOC	Dissolved Oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.0 - 13.5	1 of 4		
			Fluoride (total) µg/L	4000 (DWS)	200 - 15800	1 of 4		
			pH (high) SU	6.5 - 9.0 (A&Wc, FBC, DWS, Agl, AgL)	7.5 - 9.4	2 of 4		
	ADEQ Lakes Program SRSAG-A 100082	1999 - 1 partial suite 2000 - 1 partial suite 2001 - 2 partial suites 2002 - 2 partial suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	5.6 - 11.4	1 of 6		Low dissolved oxygen attributed to natural lake turnover of the water column in October, a naturally-occurring condition. Not used in the final assessment.
	ADEQ Lakes Program At Marina SRSAG-MAR1 100994	2000 - 1 VOC 2001 - 1 Field + 2 VOC	No exceedances					
	ADEQ Lakes Program SRSAG-MAR2 100985	1999 - 1 field 2000 - 1 VOCs	No exceedances					
	ADEQ Lakes Program SRSAG-BAG 101001	1999 - 1 partial suite	No exceedances					
	Summary Row	1998 - 2002	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	3.4 - 13.5	4 of 82	Attaining	
	A&Wc Inconclusive FC Attaining FBC Inconclusive DWS Attaining Agl Attaining AgL Attaining	101 samples 37 sampling events	Fluoride (total) µg/L	4000 (DWS)	200 - 15800	1 of 16	Attaining	ADEQ & AGFD collected a total of 101 samples from 18 sites in 1998-2002. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: <i>Escherichia coli</i> , total nitrogen, and total phosphorus.
			pH (high) SU	6.5 - 9.0 (A&Wc, FBC, DWS, Agl, AgL)	7.5 - 9.6	5 of 101	Attaining	

TABLE 16. SALT RIVER WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
SALT WATERSHED — STREAM ASSESSMENTS				
Bear Wallow Creek North and South Forks - Black River 6 miles AZ15060101-023 Unique Water	A&Wc Inconclusive FC Attaining FBC Inconclusive Agl Attaining Category 2 — Attaining Some Uses	On the Planning List due to <u>missing core parameters:</u> <i>Escherichia coli</i> and dissolved copper.		
Bear Wallow Creek, North Fork headwaters - Bear Wallow Creek 5 miles AZ15060101-022 Unique Water	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List due to <u>missing core parameters:</u> <i>Escherichia coli</i> , dissolved metals (copper and zinc), and total metals (mercury, copper, and lead).		
Bear Wallow Creek, South Fork headwaters - Bear Wallow Creek 4 miles AZ15060101-258	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 2 samples).		
Beaver Creek headwaters - Black River 13 miles AZ15060101-008	A&Wc Inconclusive FC Attaining FBC Attaining Agl Attaining Category 2 — Attaining Some Uses	On the Planning List due to: 1. <u>Missing core parameter:</u> dissolved copper. 2. Exceedance of the former turbidity standard (2 of 8 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.		
Black River Beaver Creek - Reservation Creek 11 miles AZ15060101-007	A&Wc Inconclusive FC Attaining FBC Inconclusive DWS Attaining Agl Attaining Category 2 — Attaining Some Uses	On the Planning List due to <u>missing core parameters:</u> <i>Escherichia coli</i> and dissolved copper.		
Black River, East Fork headwaters - Black River 12 miles AZ15060101-009	A&Wc Inconclusive FC Attaining FBC Attaining DWS Attaining Agl Attaining Category 2 — Attaining Some Uses	On the Planning List due to <u>missing core parameter:</u> dissolved copper.		
Black River, West Fork headwaters - Black River East Fork 15 miles AZ15060101-048	A&Wc Inconclusive FC Attaining FBC Attaining DWS Attaining Agl Attaining Category 2 — Attaining Some Uses	On the Planning List due to <u>missing core parameters:</u> dissolved metals (copper, cadmium, and zinc).		
Bloody Tanks Wash Schultz Ranch - Miami Wash 7 miles AZ15060103-034B	A&Wc Inconclusive PBC Inconclusive Category 3 — Inconclusive	No current monitoring data. Added to the Planning List in 2002 due to <u>copper</u> exceedance (1 of 1 sample). (Previously on the 303(d) List due to copper but delisted in 2002 due to insufficient monitoring data as required in the Impaired Water Identification Rule.)		
Campaign Creek headwaters - Pinto Creek 17 miles AZ15060103-037	A&Ww Attaining FC Attaining FBC Attaining Agl Attaining Category 1 — Attaining All Uses			

TABLE 16. SALT RIVER WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Canyon Creek headwaters - White Mountain Apache Res. 9 miles AZ15060103-014	A&Wc Inconclusive FC Attaining FBC Attaining DWS Attaining Agl Attaining AgL Attaining Category 2 — Attaining Some Uses	On the Planning List due to fish kill in 2002 related to the Rodeo-Chediski Fire. Further monitoring is needed to determine long-term impacts from the fire.		
Cherry Creek tributary at 34 05 09 / 110 56 04 - Salt River AZ15060103-015B (Reach was split into coldwater and warmwater segments since the last assessment. No current data in 015A.)	A&Wc Attaining FC Attaining FBC Attaining Agl Attaining AgL Attaining Category 1 — Attaining All Uses			
Christopher Creek headwaters - Tonto Creek 8 miles AZ15060105-353	A&Wc Inconclusive FC Attaining FBC Not attaining Agl Attaining AgL Attaining Category 4 — Not attaining	On the Planning List due to: 1. <u>Escherichia coli</u> TMDL follow-up monitoring (exceedances in 2 of 7 sampling events). 2. Former turbidity standard exceedances (9 of 54 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.	Delist turbidity. The turbidity standard was repealed in 2002. Move to the Planning List due to exceedances of this former standard.	
Coon Creek Unnamed tributary at 33 46 42 / 110 54 25 - Salt River 10 miles AZ15060103-039B (Reach was split into coldwater and warmwater segments since the last assessment. No current data in 039A.)	A&Ww Attaining FC Attaining FBC Attaining Agl Attaining Category 1 — Attaining All Uses			
Cottonwood Canyon headwaters - Pinto Creek 2 miles AZ15060103-891	A&We Inconclusive PBC Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 2 samples).		
Deer Creek headwaters - Rye Creek 12 miles AZ15060105-018	A&Wc Attaining FC Attaining FBC Attaining Category 1 — Attaining All Uses			
Fish Creek headwaters - Black River 14 miles AZ15060101-032	A&Ww Inconclusive FC Attaining FBC Inconclusive Agl Attaining AgL Attaining Category 2 — Attaining Some Uses	On the Planning List due to: 1. <u>Acute and chronic copper</u> exceedance (1 of 1 sampling event). 2. <u>Missing core parameters: Escherichia coli</u> and dissolved metals (copper and zinc).		
Gibson Mine tributary headwaters - Pinto Creek 1 mile AZ15060103-887	A&Ww Not attaining FC Inconclusive FBC Inconclusive Category 4A — Not attaining	On the Planning List due to: 1. Phase II TMDL and follow up monitoring for the TMDL. Copper exceeded standards in 5 of 5 sampling events. 3. <u>Low pH</u> (1 of 4 samples). 4. <u>Zinc</u> exceedance (1 of 1 sampling event). 5. <u>Missing core parameters: Escherichia coli</u> , dissolved metals (cadmium and zinc), total mercury, and turbidity/SSC.		Copper loading from this tributary was addressed in the Pinto Creek copper TMDL approved by EPA in 2001. ADEQ is currently conducting monitoring for a Phase II TMDL.
Gold Gulch Canyon headwaters - Pinto Creek 4 miles AZ15060103-894	A&We Inconclusive PBC Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		

TABLE 16. SALT RIVER WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Greenback Creek headwaters - Tonto Creek 18 miles AZ15060105-005	A&Ww Attaining FC Attaining FBC Attaining Agl Attaining Category 1 — Attaining All Uses			
Haigler Creek headwaters - unnamed reach at 34 12 23.1 / 111 00 11 15 miles AZ15060105-012A (Reach was split into coldwater and warmwater segments since the last assessment. No current data in 012B.)	A&Wc Attaining FC Attaining FBC Attaining Agl Attaining Agl Attaining Category 1 — Attaining All Uses			
Haunted Canyon headwaters - Pinto Creek 7 miles AZ15060103-879	A&Ww Attaining FC Attaining FBC Attaining Category 1 — Attaining All Uses			
Hay Creek headwaters - West Fork Black River 5 miles AZ15060101-353 Unique Water	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 2 samples).		
Miller Springs Canyon headwaters - Pinto Creek 2 miles AZ15060103-892	A&Ww Inconclusive FBC Inconclusive FC Inconclusive Category 3 — Inconclusive	On the Planning List due to: 1. Selenium exceedances in 4 of 4 samples (some of these results may have been laboratory method providing false positives). 2. Former turbidity standard exceeded in 1 of 8 samples. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring. 3. Missing core parameters: <i>Escherichia coli</i> , dissolved oxygen, and total mercury.		
Pinal Creek Jesse Lane - Salt River 6 miles AZ15060103-280D	A&Ww Attaining FC Attaining FBC Attaining Agl Attaining Category 1 — Attaining All Uses			
Pinto Creek headwaters - tributary at 33 19 27 / 110 54 56 3 miles AZ15060103-018A (Reach was split into coldwater and warmwater segments since the last assessment.)	A&Wc Not attaining FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 4A — Not attaining	On the Planning List due to: 1. Copper TMDL follow up monitoring. 2. Insufficient monitoring data to assess (only 2 samples).		Copper TMDL completed by EPA in 2001. ADEQ is collecting data to support a Phase II copper TMDL for this reach.
Pinto Creek tributary at 33 19 27 / 110 54 56 - Ripper Spring 16 miles AZ15060103-018B (Reach was split into coldwater and warmwater segments since the last assessment.)	A&Ww Not attaining FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Attaining Category 4A — Not attaining	On the Planning List due to: 1. Chronic selenium exceedances in 6 of 17 samples (some of these results may have been laboratory method providing false positives). 2. Acute and chronic zinc exceedance (1 of 22 sampling events, occurred in 2000). 3. TMDL follow-up monitoring for copper exceedances (9 of 22 sampling events). 4. Missing core parameters: <i>Escherichia coli</i> , total boron, and total mercury.		Copper TMDL completed by EPA in 2001. ADEQ is collecting data to support a Phase II copper TMDL for this reach.

TABLE 16. SALT RIVER WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Pinto Creek Ripper Spring - Roosevelt Lake 18 miles AZ15060103-018C (Renumbered reach since last assessment because of split discussed above)	A&Ww Impaired FC Attaining FBC Attaining AgI Attaining AgL Attaining Category 5 — Impaired		Add copper to the 303(d) List for chronic copper exceedances (2 of 24 sampling events). Add selenium to the 303(d) List due to chronic selenium exceedances (3 of 3 sampling events). ADEQ's samples were analyzed using different laboratory methods than BHP's samples in the above reach (see selenium comment above).	
Pinto Creek, West Fork headwaters - Pinto Creek 12 miles AZ15060103-066	A&We Inconclusive PBC Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		Sampled as part of the Pinto Creek copper TMDL. Any loadings from this tributary would be addressed in the Pinto Creek Phase II TMDL.
Reservation Creek headwaters - Black River 3 miles AZ15060101-010	A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Rye Creek headwaters - Tonto Creek 18 miles AZ15060105-014	A&Ww Attaining FC Attaining FBC Inconclusive AgL Attaining Category 2 — Attaining Some Uses	On the Planning List due to missing core parameter: <i>Escherichia coli</i> .		
Salt River Pinal Creek-Roosevelt Lake 8 miles AZ15060103-004	A&Ww Inconclusive FC Attaining FBC Inconclusive AgI Attaining AgL Attaining Category 2 — Attaining Some Uses	On the Planning List due to: 1. <i>Escherichia coli</i> exceedance (immediately after the Rodeo-Chediski Fire). 2. Total nitrogen exceedances (1 of 4 samples before the fire and 4 of 5 after the fire). 3. Suspended sediment concentration annual geometric mean exceedance (1 of 1) occurred immediately after the fire.		
Salt River Roosevelt Lake - Apache Lake 8 miles AZ15060106A-024	A&Wc Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive AgI Inconclusive AgL Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Salt River Stewart Mountain Dam - Verde River 10 miles AZ15060106A-003	A&Wc Impaired FC Attaining FBC Inconclusive DWS Attaining AgI Attaining AgL Attaining Category 5 — Impaired	On the Planning List due to <i>Escherichia coli</i> exceedances (2 of 12 sampling events, occurred in 2000)*.	Add copper to the 303(d) List for chronic copper exceedances (3 of 81 sampling events). Add dissolved oxygen to the 303(d) List. Low dissolved oxygen in 6 of 21 samples.	*Although two <i>Escherichia coli</i> exceedances, FBC was assessed as "inconclusive" rather than "impaired" for the following reasons: 1. One of the two <i>Escherichia coli</i> exceedances was very close to the standard (result is 240, standard is 235) and lab methods provide an estimate of bacterial density (most probable number) (see discussion in Chapter III). 2. The two exceedances represent a small proportion of the total number of samples on this reach (2 of 96 samples, 2 of 40 monitoring events).
Snake Creek headwaters - Black River 6 miles AZ15060101-045 Unique Water	A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive Category 3 — Inconclusive	On the Planning List due to missing core parameters: <i>Escherichia coli</i> , dissolved metals (copper and zinc), and total metals (mercury, copper and lead).		

TABLE 16. SALT RIVER WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Spring Creek headwaters - Tonto Creek 20 miles AZ15060105-010	A&Ww Attaining FC Attaining FBC Inconclusive Agl Attaining Category 2 — Attaining Some Uses	On the Planning List due to <u>missing core parameter</u> : <i>Escherichia coli</i> .		
Stinky Creek Fort Apache Reservation - West Fork Black River AZ15060101-352A Unique Water	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List due to <u>missing core parameters</u> : <i>Escherichia coli</i> , dissolved metals (copper, cadmium, and zinc), and total metals (mercury, copper and lead).		
Tonto Creek headwaters - unnamed tributary at 34 18 10 / 111 04 14 8 miles AZ15060105-013A (Reach was split into coldwater and warmwater segments since the last assessment.)	A&Wc Impaired FC Attaining FBC Not attaining Agl Attaining Agl Attaining Category 5 — Impaired	On the Planning List for: 1. <i>Escherichia coli</i> TMDL follow-up monitoring. (<i>E. coli</i> exceedances in 1 of 15 sampling events, occurred in 2000). 2. Exceedances of the former <u>turbidity</u> standard (19 of 99 samples, or 19 of 41 samples below the USGS gage). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.	Nitrogen placed on the 2004 303(d) List by EPA (1 of 1 annual mean exceedance). Delist turbidity. The turbidity standard was repealed in 2002. Add to the Planning List due to exceedances of the former standard.	
Tonto Creek unnamed tributary at 34 18 10 / 111 04 14 - Haigler Creek 9 miles AZ15060105-013B (Reach was split into coldwater and warmwater segments since the last assessment.)	A&Ww Impaired FC Attaining FBC Not attaining Agl Attaining Agl Attaining Category 5 — Impaired	On the Planning List for: 1. <i>Escherichia coli</i> TMDL follow-up monitoring. (<i>E. coli</i> exceedances in 2 of 7 sampling events, occurred in 2000). 2. Former <u>turbidity</u> standard exceedances (7 of 21 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.	Nitrogen placed on the 2004 303(d) List by EPA (1 of 1 annual mean exceedance). Delist turbidity. The turbidity standard was repealed in 2002. Add to the Planning List. The Aquatic and Wildlife use is assessed as "inconclusive" due to exceedances of the former turbidity standard.	
Tonto Creek Rye Creek - Gun Creek 5 miles AZ15060105-008	A&Ww Attaining FC Attaining FBC Attaining Agl Attaining Agl Attaining Category 1 — Attaining All Uses		Delist turbidity. The standard was repealed in 2002. No exceedances of the former standard in 18 samples.	
SALT WATERSHED — LAKE ASSESSMENTS				
Apache Lake 2200 acres AZL15060106A-0070	A&Wc Inconclusive FC Attaining FBC Inconclusive DWS Inconclusive Agl Attaining Agl Attaining Category 2 — Attaining Some Uses Trophic status — Oligotrophic	On the Planning List due to: 1. <u>Missing core parameters</u> : <i>Escherichia coli</i> , nitrogen, phosphorus, and total fluoride. 2. Low <u>dissolved oxygen</u> (7 of 45 samples).		
Big Lake 440 acres AZL15060101-0160	A&Wc Inconclusive FC Attaining FBC Inconclusive DWS Attaining Agl Attaining Agl Attaining Category 2 — Attaining Some Uses Trophic status — Eutrophic	On the Planning List due to: 1. <u>Missing core parameters</u> : <i>Escherichia coli</i> and dissolved cadmium. 2. Low <u>dissolved oxygen</u> (1 of 4 samples).		

TABLE 16. SALT RIVER WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Canyon Lake 450 acres AZL15060106A-0250	A&Wc Impaired FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive Category 5 — Impaired Trophic status not calculated	On the Planning List due to: 1. <u>Chronic ammonia</u> exceedance (1 of 20 sampling events). 2. <u>Missing core parameters</u> : <i>Escherichia coli</i> , total fluoride, total boron, total nitrogen, nitrate, total phosphorus, total metals (mercury, arsenic, chromium, lead, and copper), and dissolved metals (copper, cadmium, and zinc).	Add dissolved oxygen to the 303(d) List due to low dissolved oxygen in 7 of 35 samples.	
Crescent Lake 150 acres AZL15060101-0420	A&Wc Impaired FC Attaining FBC Impaired Agl Impaired Agl Impaired Category 5 — Impaired Trophic status — Eutrophic	On the Planning List due to: 1. Fish kill in 1998 related to algal blooms, weed growth, and high pH may indicate a narrative nutrient standard violation. 2. <u>Nitrogen</u> exceedance in 1 of 9 samples. 3. <u>Missing core parameters</u> : <i>Escherichia coli</i> , turbidity, and dissolved metals (copper and cadmium).	EPA placed this reach on the 2002 303(d) List for <u>high pH</u> based on 5 of 7 exceedances. Once listed, the lake cannot be delisted until a TMDL is complete or pH data indicate that designated uses are being attained.	
Lake Sierra Blanca 30 acres AZL15060101-1390	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 3 — Inconclusive Trophic status not calculated	On the Planning List. No current monitoring data. Added in 2002 due to a <u>fish kill</u> in 1998.		Fish kill in 1998 (related to weed growth and high pH) may be evidence of narrative standards violations.
Roosevelt Lake 18,350 acres AZL15060103-1240	A&Ww Inconclusive FC Attaining FBC Inconclusive DWS Attaining Agl Attaining Agl Attaining Category 2 — Attaining Some Uses Trophic status — Mesotrophic-Hypereutrophic	On the Planning List due to: 1. Former turbidity standard exceedances before the fire (11 of 46 samples). Causes and sources of the turbidity will be investigated during the next monitoring cycle for this watershed. 2. <u>Missing core parameters</u> : <i>Escherichia coli</i> , total nitrogen, and total phosphorus. 3. Insufficient data following the fire to make a full assessment. Monitoring will be scheduled to determine whether residual impacts remain.		
Saguaro Lake 1025 acres AZL15060106A-1290	A&Wc Inconclusive FC Attaining FBC Inconclusive DWS Attaining Agl Attaining Agl Attaining Category 2 — Attaining Some Uses Trophic status — Mesotrophic	On the Planning List due to <u>missing core parameters</u> : <i>Escherichia coli</i> , total nitrogen, and total phosphorus.		



Aravaipa Creek, near the Aravaipa Canyon Wilderness Area, in southeastern Arizona

The San Pedro-Willcox Playa-Rio Yaqui Watershed

The San Pedro River begins in the mountains near Cananea Sonora, Mexico, and flows north about 100 miles through the southeast corner of Arizona to join the Gila River near Winkelman, Arizona. This watershed also includes two other hydrologically distinct areas: 1) Willcox Playa, a terminal basin (does not drain out of the area), and 2) Two relatively short drainages, Whitewater Draw and Black Draw, that flow to the Rio Yaqui in Mexico.

This 7,015 square-mile watershed is lightly populated with only 130,000 people (2000 census). Communities in the area include the rapidly growing Sierra Vista area and several historic towns, such as Tombstone, Douglas, and Bisbee. Grazing is widespread, and a significant area of irrigated agriculture is located on the eastern side of the watershed. Historic copper, silver, and gold mining took place across the watershed; however, few mines are still active.

Land ownership is divided approximately as: 40% private land, 40% state land, 20% federal land, and no Tribal lands. The Bureau of Land Management established the 50,000 acre San Pedro Riparian National Conservation Area in 1988 to protect this critical habitat.

Elevation varies from 4,000 feet (above sea level), with desert grassland and warmwater aquatic communities, to 10,700 feet at Mount Graham with alpine forest. Areas above 5,000 feet typically support coldwater aquatic communities where perennial waters exist.

The assessment – Assessments were completed for 37 stream reaches and three lakes. Of the 331 stream miles assessed, 70 miles (five reaches) were attaining all uses and 84 miles (eight reaches) were impaired. All others were assessed as inconclusive or attaining some uses. Of the 12 lake acres assessed (three lakes), all were assessed as inconclusive.

A watershed assessment map follows on the next page, illustrating stream and lake assessments by category. The San Pedro **monitoring table** (Table 17) following the map summarizes the water quality data used in the assessment. It is followed by the **assessment table** (Table 18), which bridges current assessments with past assessments and impaired water identification. Important to note in this table are comments regarding previous 303(d) lists (what has been added and removed), category designations (1 through 5), references to potential actions by EPA, and status of TMDLs.

Detailed information on how to use these tables is found at the beginning of this chapter (p. IV-1). Assessment methods and criteria can be found in Chapter III.

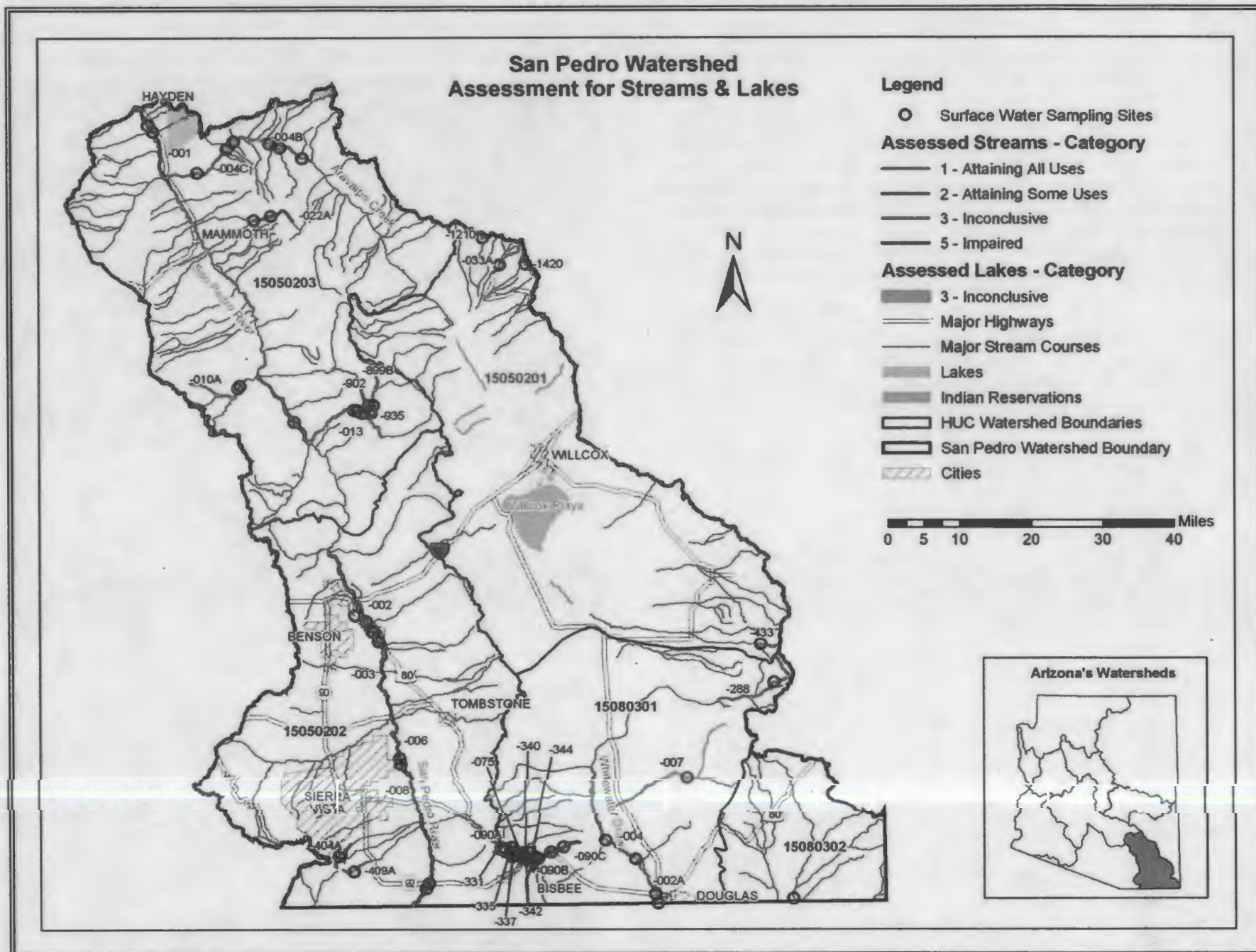


Figure 21. Watershed monitoring and assessments

TABLE 17. SAN PEDRO - WILLCOX PLAYA - RIO YAQUI WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
STREAM MONITORING DATA								
Aravaipa Creek Stowe Gulch - Wilderness Area AZ15050203-004B A&Ww, FC, FBC, AgL Unique Water	ADEQ Ambient Monitoring Near springs SPARA012.45 100209	1998 - 1 partial suite	No exceedances					
	ADEQ Ambient Monitoring At east trail head SPARA011.03 100210	1998 - 1 partial suite 2000 - 1 partial suite	No exceedances					
	ADEQ Ambient Monitoring Below Parson's Canyon SPARA010.40 100211	1998 - 1 partial suite 1999 - 1 partial suite 2000 - 1 full + 2 partial suits	No exceedances					
	ADEQ Ambient Monitoring At Hell's Half Acre (West end) SPARA007.92 100716	1999 - 1 full suite 2000 - 4 full suites 2001 - 2 full suites 2002 - 1 full suite	No exceedances					
	Summary Row A&Ww Attaining FC Attaining FBC Attaining AgL Attaining	1998 - 2002 16 samples 13 sampling events	No exceedances					ADEQ collected 16 samples at 4 sites in 1998 - 2002. Assessed as "attaining all uses."
Aravaipa Creek Wilderness Area - San Pedro River AZ15050203-004C A&Ww, FC, FBC, AgL	ADEQ Ambient Monitoring At Woods Ranch SPARA006.75 100212	1998 - 1 full suite 2000 - 1 full suite 2002 - 1 Turbidity (former standard)	No exceedances					
	ADEQ Ambient Monitoring 5 miles from terminus SPARA002.96 100213	1998 - 1 partial suite	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	1998 - 2002 4 samples 3 sampling events	No exceedances					ADEQ collected 4 samples at 2 sites in 1998 - 2002. Assessed as "Inconclusive" and placed on the Planning List due to missing core parameters: <i>Escherichia coli</i> , dissolved oxygen, dissolved metals (cadmium, copper, and zinc), and total metals (mercury, copper, and lead).
Bass Canyon Creek tributary at 32 26 06 / 110 13 18 - Hot Springs Canyon Creek AZ15050203-899B A&Ww, FC, FBC, AgL	ADEQ Ambient Monitoring At stream length 9.2 miles SPBAS001.54 100214	1998 - 1 partial suite	No exceedances					
	ADEQ Ambient Monitoring Above Double R Canyon SPBAS000.75 100215	1999 - 1 full suite 2000 - 3 full suites	No exceedances					
	ADEQ Ambient Monitoring Above Hot Springs Canyon SPBAS000.24 100217	1998 - 1 partial suite	No exceedances					

TABLE 17. SAN PEDRO - WILLCOX PLAYA - RIO YAQUI WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row A&Ww Attaining FC Attaining FBC Attaining AgL Attaining	1998 - 2000 6 samples 4 sampling events	No exceedances					ADEQ collected 6 samples at 3 sites in 1998 - 2000. Assessed as "attaining all uses."
Bass Canyon, unnamed tributary of headwaters - Bass Canyon Creek AZ15050203-935 A&Ww, FBC, FC (tributary rule)	ADEQ Ambient Monitoring East of Bass Canyon Creek SPUBS000.20 100224	1998 - 1 suite	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive	1998 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Brewery Gulch Wildcat Canyon - Mule Gulch AZ15080301-337 A&We, PBC	ADEQ TMDL Program Above mineralized zone RMBRG000.90	2000 - 1 field + metals	Copper (dissolved) µg/l	varies by hardness (A&We acute)	26	1 of 1		
	ADEQ TMDL Program At Mule Gulch RMBRG000.01	2000 - 4 field + metals	Copper (dissolved) µg/l	varies by hardness (A&We - acute)	60 - 150	4 of 4		
			pH SU	6.5 - 9.0 (A&We, PBC)	6 - 7.5	1 of 4		
	Summary Row A&We Impaired PBC Inconclusive	2000 5 samples 4 sampling events	Copper (dissolved) µg/l	varies by hardness (A&We)	26 - 150	5 of 5 samples 4 of 4 events (occurred in 2000)	Impaired	Samples were collected as part of the Mule Gulch copper TMDL. Copper and pH loadings will be addressed in the Mule Gulch TMDL.
			pH SU	6.5 - 9.0 (A&We, PBC)	6 - 7.5	1 of 5	Inconclusive	
Buehman Canyon headwaters - end Unique Water AZ15050203-010A A&Ww, FC, FBC, AgL Unique Water	ADEQ Ambient Monitoring 2 miles below Bullock Cyn. SPBHC002.46 100425	1999 - 1 full suite 2000 - 2 full + 1 partial suites	Dissolved oxygen mg/L	> 6.0 (90% saturation) A&Ww	2.4 - 8.3 (31 - 89%)	2 of 4		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.
	ADEQ Ambient Monitoring 1/4 mile below dry wash SPBHC002.17 101175	2000 - 1 full suite 2001 - 2 full suites 2002 - 1 full suite	No exceedances					
	Summary Row A&Ww Attaining FC Attaining FBC Attaining AgL Attaining	1999 - 2002 8 samples 8 sampling events	No exceedances					ADEQ collected 8 samples at 2 sites in 1999 - 2002. Assessed as "attaining all uses."
C - Canyon headwaters - Mule Gulch AZ15080301-342 A&We, PBC (tributary rule)	ADEQ TMDL Program At Highway 80 RMCCN000.01	2000 - 1 field + metals	Copper (dissolved) µg/l	varies by hardness (A&We)	55	1 of 1		
	Summary Row A&We Inconclusive PBC Inconclusive	2000 1 sampling event	Copper (dissolved) µg/l	varies by hardness (A&We)	55	1 of 1 event (in 2000)	Inconclusive	Samples were collected as part of the Mule Gulch copper TMDL. Copper loadings will be addressed in the Mule Gulch TMDL.

TABLE 17. SAN PEDRO - WILLCOX PLAYA - RIO YAQUI WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
Copper Creek headwaters - Prospect Cyn. AZ15050203-022A A&Ww, FC, FBC, AgL	ADEQ Ambient Monitoring Above Bluebird Mine SPCOP007.09 100433	1998 - 1 partial suite 1999 - 1 full suite 2000 - 1 full + 2 partial suites	No exceedances					
	ADEQ Ambient Monitoring Below Dark Canyon SPCOP005.80 100944	1999 - 1 full suite 2000 - 3 full suites	Selenium (total) µg/L	2 (A&Ww chronic)	<5 - 7.1	1 of 1		Lab reporting limits for two other samples were too high to use results for assessment.
	Summary Row A&Ww Inconclusive FC Attaining FBC Attaining AgL Attaining	1999 - 2000 9 samples 5 sampling events	Selenium (total) µg/L	2 (A&Ww chronic)	<5 - 7.1	1 of 1 event	Inconclusive	ADEQ collected 9 samples at 2 sites from 1998 - 2000. Assessed as "attaining some uses" and placed on the Planning List due to selenium exceedance.
Double R Canyon Creek headwaters - Bass Cyn Creek AZ15050203-902 A&Ww, FC, FBC	ADEQ Ambient Monitoring SPDOU001.00 100222	1998 - 1 full suite	Dissolved oxygen mg/l	> 6.0 (90% saturation) (A&Ww)	5.7 (61%)	1 of 1		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.
	ADEQ Ambient Monitoring Near Terminus SPDOU000.20 100223	1998 - 1 full suite 2000 - 1 full suite	Dissolved oxygen mg/l	> 6.0 (90% saturation) (A&Ww)	4.7 - 6.2 (59 - 70%)	1 of 2		
	Summary Row A&Ww Attaining FC Attaining FBC Inconclusive	1998 - 2000 3 sampling events	No exceedances					ADEQ collected 3 samples at 2 sites from 1998 - 2000. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameter: <i>Escherichia coli</i> .
Dubacher Canyon headwaters - Mule Gulch AZ15080301-075 A&We, PBC (tributary rule)	ADEQ TMDL Program Below Highway 80 RMDBC000.01	2000 - 1 field + metals	Copper (dissolved) µg/l	Varies by hardness (A&We)	1,400	1 of 1		
			pH (low) SU	6.5-9.0 (A&We, PBC)	2.9	1 of 1		
	Summary Row A&We Inconclusive PBC Inconclusive	2000 1 sampling event	Copper (dissolved) µg/l	Varies by hardness (A&We)	1,400	1 of 1 event	Inconclusive	Samples were collected as part of the Mule Gulch copper TMDL. Copper and pH loadings will be addressed in the Mule Gulch TMDL.
			pH (low) SU	6.5-9.0 (A&We, PBC)	2.9	1 of 1	Inconclusive	
Grant Creek headwaters - trib at 32 38 09 / 109 56 35 AZ15050201-033A A&Wc, FC, FBC, DWS, AgL	ADEQ Ambient Monitoring 1 mile below Post Creek WPGRA006.56 100561	1999 - 1 full suite 2000 - 1 partial suite	No exceedances					
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive AgL Inconclusive	1999 - 2000 2 sampling events	No exceedances					Insufficient monitoring data to assess.
Hendricks Gulch headwaters - Mule Gulch AZ15080301-335 A&We, PBC (tributary rule)	ADEQ TMDL Program At Mule Gulch RMHNG000.01	2000 - 3 field + metals	Copper (dissolved) µg/l	Varies by hardness (A&We)	15 - 76	1 of 3		
			pH (low) SU	6.5 - 9.0 (A&We, PBC)	5.8 - 7.4	1 of 2		

TABLE 17. SAN PEDRO - WILLCOX PLAYA - RIO YAQUI WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row	2000	Copper (dissolved) µg/l	varies by hardness (A&We)	15 - 78	1 of 3 events	Inconclusive	Samples were collected as part of the Mule Gulch copper TMDL. Copper and pH loadings will be addressed in the Mule Gulch TMDL.
	A&We Inconclusive PBC Inconclusive	3 sampling events	pH (flow) SU	8.5 - 9.0 (A&We, PBC)	5.8 - 7.4	1 of 2	Inconclusive	
Hot Springs Canyon Creek headwaters - San Pedro River AZ15050203-013 A&Ww, FC, FBC, AgL	ADEQ Ambient Monitoring Below Bass Canyon Creek SPHSC006.22 100219	1998 - 1 partial suite	No exceedances					
	ADEQ Ambient Monitoring Below Wildcat Canyon SPHSC006.13 100574	1999 - 1 full suite 2000 - 2 full + 2 partial suites	No exceedances					
	ADEQ Ambient Monitoring Southwest of Wildcat Peak SPHSC006.04 100220	1998 - 1 partial suite	No exceedances					
	Summary Row A&Ww Attaining FC Attaining FBC Attaining AgL Attaining	1998 - 2000 7 samples 6 sampling events	No exceedances					ADEQ collected 7 samples at 3 sites in 1998-2000. Assessed as "attaining all uses."
Leslie Canyon Creek headwaters - Whitewater Draw 15080301-007 A&Ww, FBC, FC, AgL	USGS Ambient Monitoring At Leslie Canyon National Wildlife Refuge RMLES007.02 101500	2002 - 1 partial suite	Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	4.5 (52%)	1 of 1		
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	2002 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Miller Canyon Creek headwaters - Broken Arrow Ranch Road AZ15050202-409A A&Wc, FC, FBC, DWS, AgL	ADEQ Biocriteria Program Near headwaters SPMLC008.64 100592	1998 - 1 suite	No exceedances					
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive AgL Inconclusive	1998 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Morales Creek headwaters - Mule Gulch AZ15080301-331 A&We, PBC (tributary rule)	ADEQ TMDL Program Near Mule Gulch RMMOR000.40	2000 - 1 field + metals	Copper (dissolved) µg/l	varies by hardness (A&We)	18	1 of 1		
	Summary Row A&We Inconclusive PBC Inconclusive	2000 1 sampling event	Copper (dissolved) µg/l	varies by hardness (A&We)	18	1 of 1 event	Inconclusive	Samples were collected as part of the Mule Gulch copper TMDL. Copper and pH loadings will be addressed in the Mule Gulch TMDL.

TABLE 17. SAN PEDRO - WILLCOX PLAYA - RIO YAQUI WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
Mule Gulch headwaters - above Lavender Pit AZ15080301-090A A&Ww, FC, PBC	ADEQ TMDL Program Below Spring Canyon RMMLG008.16	2002 - 1 field + metals	No exceedances					
	ADEQ TMDL Program At Castle Rock (MG-2) RMMLG007.88 100506	1998 - 4 pH, copper, zinc	No exceedances					
	ADEQ TMDL Program At Castle Rock RMMLG007.86	2000 - 1 field + 2 metals	No exceedances					
	ADEQ TMDL Program Above Lavender Pit RMMLG007.62 (Mule Gulch 100)	1999 - 1 field + metals 2000 - 5 field + metals 2002 - 4 field + metals	Copper (dissolved) µg/l	varies by hardness (A&Ww - acute)	10 - 160	7 of 10		
			Copper (dissolved) µg/l	varies by hardness (A&Ww - chronic)	10 - 160	8 of 10		
			pH (low) SU	6.5 - 9.0 (A&We, PBC)	5.8 - 8.7	1 of 5		
	Summary Row A&Ww Impaired FC Inconclusive PBC Inconclusive	1998 - 2000 15 sampling events	Copper (dissolved) µg/l	varies by hardness (A&Ww - acute)	10 - 160	7 of 15 events	Impaired	ADEQ collected 15 samples at 4 sites in 1998-2000. Assessed as "Impaired" due to copper exceedances.
			Copper (dissolved) µg/l	varies by hardness (A&Ww - chronic)	10 - 160	8 of 15 events	Impaired	Placed on the Planning List due to missing core parameters: <i>Escherichia coli</i> , dissolved oxygen, turbidity/SSC, and total mercury.
			pH (low) SU	6.5 - 9.0 (A&We, PBC)	5.8 - 8.7	1 of 10 events	Attaining	
Mule Gulch above Lavender Pit - Bisbee WWTP AZ15080301-090B A&We, PBC	ADEQ TMDL Program Above mill site RMMLG007.20	1999 - 1 pH + metals	Copper (dissolved) up/l	Varies by hardness (A&We)	4,200	1 of 1		
				1300 (PBC total)	4,200	1 of 1		Dissolved copper data were compared to the total copper standards.
			pH (low) SU	6.5 - 9.0 (A&We, PBC)	3.1	1 of 1		
	ADEQ TMDL Program Below old mill site RMMLG007.19 (Mule Gulch 150)	2000 - 2 pH + metals	Copper (dissolved) up/l	Varies by hardness (A&We)	420 - 4,000	4 of 4		
				1300 (PBC total)	420 - 4,000	3 of 4		Dissolved copper data were compared to the total copper standards.
			pH (low) SU	6.5 - 9.0 (A&We, PBC)	3 - 5.9	1 of 2		
	ADEQ TMDL Program At traffic circle RMMLG007.16 100507	1998 - 3 pH + metals	Copper (dissolved) µg/l	Varies by hardness (A&We)	1762-10,050	3 of 3		
				1300 (PBC total)	2356 - 10050	3 of 3		Dissolved copper data were compared to the total copper standards.
			pH (low) SU	6.5 - 9.0 (A&We, PBC)	3.4 - 5.8	3 of 3		
			Zinc (dissolved) µg/l	Varies by hardness (A&We)	2,040-3,760	2 of 3		

TABLE 17. SAN PEDRO - WILLCOX PLAYA - RIO YAQUI WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	ADEQ TMDL Program Above C-Canyon RMMLG006.99	1999 - 1 pH + metals	Copper (dissolved) µg/L	Varies by hardness (A&We)	12,000	1 of 1		
				1300 (PBC - total)	12,000	1 of 1		Dissolved copper data were compared to the total copper standards.
			Lead (dissolved) µg/L	15 (PBC- total)	35	1 of 1		Dissolved lead data were compared to the total lead standards.
			pH (low) SU	6.5 - 9.0 (A&We, PBC)	3.2	1 of 1		
	Summary Row A&We Impaired PBC Impaired	1998 - 2002 17 samples 10 sampling events	Copper (dissolved) µg/L	varies by hardness (A&We)	11 - 40,000	8 of 8 events (in 1998-2002)	Impaired	ADEQ collected 7 samples at 4 sites in 1998-2002. Assessed as "impaired" due to copper and pH exceedances.
				1300 (PBC - total)	11 - 4,000	7 of 8	Inconclusive	"EPA placed pH on the list based on 7 exceedances in 15 samples. Arizona's Impaired Water Identification Rule requires at least 20 samples to base a listing decision for pH; however, once listed a parameter cannot be delisted until a TMDL is complete or data indicate designated uses are being "attained".
			Lead (dissolved) µg/L	15 (PBC- total)	35	1 of 2	Inconclusive	Zinc is now supporting uses based on 0 exceedances in 4 sampling events in the last 3 years of sampling.
			pH (low) SU	6.5 - 9.0 (A&We, PBC, Agt.)	3.2	7 of 7	Inconclusive (Impaired*)	A TMDL for metals and low pH is currently being prepared for Mule Gulch and contributing tributaries.
			Zinc (dissolved) µg/l	Varies by hardness (A&We)	2,040 - 3,760	2 of 8 events (Did not exceed last 3 years)	Attaining	Also placed on the Planning List due to dissolved lead exceedance.
Mule Gulch Bisbee WWTP - Highway 80 bridge AZ15080301-090C A&Wedw, PBC	ADEQ TMDL Program Below WWTP (Site 4) RMMLG006.38 100508	1998 - 4 pH + metals	Copper (dissolved) µg/L	varies by hardness (A&Wedw chronic)	<15 - 30	2 of 4		
				varies by hardness (A&Wedw acute)	<15 - 30	1 of 4		
	ADEQ TMDL Program At MG-200 (new site) RMMLG006.24	2000 - 3 field + metals 2002 - 2 field + metals	Copper (dissolved) µg/l	Varies by hardness (A&Wedw chronic)	<10 - 9400	5 of 5		
				Varies by hardness (A&Wedw acute)	<10 - 9400	5 of 5		
				1300 (PBC - total)	55 - 9400	2 of 4		Dissolved copper data were compared to the total copper standard.
			Cadmium (dissolved) µg/L	varies by hardness (A&Wedw chronic)	<1 - 18	3 of 4		
			Lead (dissolved) µg/L	varies by hardness (A&Wedw chronic)	<5 - 71	1 of 3		
				15 (PBC - total)	<5 - 71	1 of 3		Dissolved lead data were compared to the total lead standard.

TABLE 17. SAN PEDRO - WILLCOX PLAYA - RIO YAQUI WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS	
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT		
	ADEQ TMDL Program At MG-200 (old site) RMMLG006.09	1999 - 1 field + metals 2000 - 2 field + metals	pH SU	6.5 - 9.0 (A&Wedw, PBC)	3.1 - 8.2	2 of 4			
			Zinc (dissolved) µg/l	varies by hardness (A&Wedw)	110 - 4,300	3 of 5			
			Cadmium (dissolved) µg/L	varies by hardness (A&Wedw chronic)	<1 - 16	3 of 3			
				varies by hardness (A&Wedw acute)	<1 - 16	1 of 3			
			Copper (dissolved) µp/l	varies by hardness (A&Wedw chronic)	10 - 7,300	3 of 3			
				varies by hardness (A&Wedw acute)	10 - 7,300	3 of 3			
				1300 (PBC)	<10 - 7300	1 of 3			Dissolved copper data were compared to the total copper standard.
			pH (low) SU	6.5 - 9.0 (A&Wedw, PBC)	4.2 - 8.1	1 of 2			
			Zinc (dissolved) µg/l	Varies by hardness (A&Wedw)	50 - 1,100	2 of 3			
	ADEQ TMDL Program Site MG6 RMMLG006.03 100509	1998 - 3 field + metals	Copper (dissolved) µg/l	Varies by hardness (A&Wedw acute)	43-85	3 of 3			
				varies by hardness (A&Wedw chronic)	43 - 85	3 of 3			
	ADEQ TMDL Program At MG-300 (MG-1) At 1 st Elfrida cutoff RMMLG004.65	1998 - 2 field + metals 1999 - 1 field + metals 2000 - 4 field + metals 2002 - 1 field + metals	Copper (dissolved) up/l	varies by hardness (A&Wedw chronic)	44 - 12,000	7 of 8			
				varies by hardness (A&Wedw acute)	44 - 12,000	6 of 8			
				1300 (PBC - total)	44 - 12,000	2 of 8		Dissolved copper data were compared to the total copper standards.	
			Cadmium (dissolved) µg/L	varies by hardness (A&Wedw chronic)	1.2 - 34	5 of 7			
				varies by hardness (A&Wedw acute)	1.2 - 34	3 of 7			
			Lead (dissolved) µg/L	varies by hardness (A&Wedw chronic)	<5 - 59	2 of 4			
				15 (PBC - total)	<5 - 59	2 of 4		Dissolved lead data were compared to the total lead standard.	
			Zinc (dissolved) µg/l	Varies by hardness (A&Wedw)	<50 - 2,200	3 of 9			
			pH (low) SU	6.5-9.0 (A&Wedw, PBC)	3.16 - 8.58	2 of 10			

TABLE 17. SAN PEDRO - WILLCOX PLAYA - RIO YAQUI WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
	Summary Row	1998-2002	Copper (dissolved) µg/l	varies by hardness (A&Wedw acute)	<10 - 9400	12 of 12 events (in 1998-2002)	Impaired	ADEQ collected 24 samples at 6 sites in 1998 - 2002. Assessed as "Impaired" due to copper, cadmium, and zinc exceedances and low pH. A TMDL for metals and low pH is currently being prepared for Mule Gulch and contributing tributaries. Also placed on the Planning List due to lead exceedance and missing core parameters: dissolved oxygen, <i>Escherichia coli</i> , and turbidity/SSC.
	A&Wedw Impaired PBC Impaired	24 samples 12 sampling events		varies by hardness (A&Wedw chronic)	<10 - 9400	12 of 12 events	Impaired	
				1300 (PBC - total)	55 - 9400	6 of 21	Impaired	
			Cadmium (dissolved) µg/L	varies by hardness (A&Wedw acute)	<1 - 18	3 of 8 events (in 1998-2000)	Impaired	
				varies by hardness (A&Wedw chronic)	<1 - 18	6 of 8 events	Impaired	
			Lead (dissolved) µg/L	varies by hardness (A&Wedw chronic)	<5 - 71	1 of 6 events	Inconclusive	
				15 (PBC - total)	<5 - 71	1 of 5	Inconclusive	
			pH SU	6.5 - 9.0 (A&Wedw, PBC)	3.1 - 8.2	5 of 23	Impaired	
Mule Gulch Highway 80 bridge - Whitewater Draw AZ15080301-090D A&We, PBC, AgL	ADEQ TMDL Program At 2 nd Elfrida cutoff RMMLG003.40	1998 - 1 field + metals	Copper (dissolved) µg/l	varies by hardness A&We acute	5,500	1 of 1		Dissolved copper data were compared to the total copper standards.
				1300 (PBC - total)	5,500	1 of 1		
				500 (AgL)	5,500	1 of 1		
	Summary Row	1998	Copper (dissolved) µg/l	varies by hardness A&We acute	5,500	1 of 1 event	Inconclusive	ADEQ collected 1 sample in 2000. Reach assessed as "Inconclusive" and placed on the Planning List due to copper exceedances and insufficient monitoring.
	A&We Inconclusive PBC Inconclusive AgL Inconclusive	1 sample		500 (AgL)	5,500	1 of 1	Inconclusive	
				1300 (PBC - total)	5,500	1 of 1	Inconclusive	
	ADEQ TMDL Program At Mule Gulch RMMHC000.01	2000 - 1 field + metals	Copper (dissolved) µg/l	varies by hardness (A&We)	15	1 of 1		
	Summary Row	2000	Copper (dissolved) µg/l	varies by hardness (A&We)	15	1 of 1 event (in 2000)	Inconclusive	Samples were collected as part of the Mule Gulch copper TMDL. Copper loadings will be addressed in the Mule Gulch TMDL.
	A&We Inconclusive PBC Inconclusive	1 sampling event						

TABLE 17. SAN PEDRO - WILLCOX PLAYA - RIO YAQUI WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
OK and Youngblood tributaries headwaters - Brewery Gulch AZ15050202-999 A&We, PBC (tributary rule)	ADEQ TMDL Program On "B" Hill	2000 - 1 field + metals	Copper (dissolved) µg/L	varies by hardness (A&We)	180	1 of 1		
	Summary Row	2000	Copper (dissolved) µg/L	varies by hardness (A&We)	180	1 of 1 event (In 2000)	Inconclusive	Samples were collected as part of the Mule Gulch copper TMDL. Copper loadings will be addressed in the Mule Gulch TMDL.
	A&We Inconclusive PBC Inconclusive	1 sampling event						
Ramsey Canyon Creek headwaters - Forest Road 110 AZ15050202-404A A&Wc, FC, FBC, AgL, AgL	ADEQ Ambient Monitoring Above Nature Conservancy SPRMC007.43 100625	1998 - 1 partial suite 2000 - 1 full suite 2001 - 1 full suite	No exceedances					
	ADEQ Ambient Monitoring At Box Canyon SPRMC007.18 101060	2000 - 1 full + 1 partial suites	No exceedances					
	Summary Row A&Wc Inconclusive FC Attaining FBC Attaining AgL Attaining AgL Attaining	1998 - 2001 5 samples 5 sampling events	No exceedances					ADEQ collected 5 samples at 2 sites in 1998 - 2001. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameter: dissolved zinc.
Rucker Canyon Creek headwaters - Whitewater Draw AZ15080301-288 A&Wc, FC, FBC, AgL	ADEQ Ambient Monitoring Above upper-most campsite RMRUC005.63 100938	1999 - 1 full suite 2000 - 3 full suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.4 - 7.9 (77 - 95%)	1 of 4		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.
	Summary Row A&Wc Attaining FC Attaining FBC Attaining AgL Attaining	1999 - 2000 4 sampling events	No exceedances					ADEQ collected 4 samples in 1999-2000. Assessed as "attaining all uses."
San Pedro River Mexico border - Charleston AZ15050202-008 A&Ww, FC, FBC, AgL, AgL	USGS Ambient Monitoring At Palominas (transect site) 100485	2001 - 1 pH, fluoride	No exceedances					
	ADEQ & USGS Fixed Station Near Palominas SPSPR113.55 100275	1998 - 3 full suites 1999 - 2 full + 1 partial suites 2000 - 3 full suites + 7 partial suites 2001 - 4 full suites + 14 partial suites 2002 - 1 full suites + 9 partial suites	Arsenic (total) µg/L	50 (FBC)	<10 - 86	1 of 16		
			Copper (dissolved) µg/L	varies by hardness (A&Ww chronic)	<10 - 23	2 of 16		
				varies by hardness (A&Ww acute)	<10 - 23	1 of 16		
			Copper (total) µg/L	500 (AgL)	<10 - 1200	1 of 16		
			Dissolved oxygen mg/l	> 6.0 (90% saturation) (A&Ww)	4.1 - 9.5 (50 - 94%)	2 of 16		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.
			Escherichia coli CFU	235 (FBC)	0 - 493	1 of 16		

TABLE 17. SAN PEDRO - WILLCOX PLAYA - RIO YAQUI WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
			Lead (total) µg/L	15 (FBC)	<5 - 230	1 of 16		Lab reporting limits for 15 other selenium samples were too high to use results for assessment.
				100 (AgL)	<5 - 230	1 of 16		
			Selenium (total) µg/L	2 (A&Ww chronic)	<5 - 5	1 of 1		
			Turbidity (former standard) NTU	50 (A&Ww)	1 - >1000	2 of 16		
	USGS & ADEQ Fixed Station #09471000 At Charleston SPSPR096.49 100291	1998 - 12 partial suites 1999 - 8 partial suites 2000 - 10 partial suites 2001 - 11 partial suites 2002 - 9 partial suites	Dissolved oxygen mg/l	> 6.0 (A&Ww)	5.6 - 9.9	3 of 50		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.
	Summary Row A&Ww Impaired FC Attaining FBC Attaining AgL Attaining AgL Attaining	1998 - 2002 95 samples 51 sampling events	Arsenic (total) µg/L	50 (FBC)	<10 - 86	1 of 16	Attaining	USGS and ADEQ collected 95 samples at 3 sites in 1998 - 2002. Assessed as "Impaired" due to copper exceedances. Also placed on the Planning List due to one selenium exceedance.
			Copper (dissolved) µg/L	varies by hardness (A&Ww chronic)	<10 - 23	2 of 16 events	Impaired	
				varies by hardness (A&Ww acute)	<10 - 23	1 of 16 events (in 2001)	Inconclusive	
			Copper (total) µg/L	500 (AgL)	<10 - 1200	1 of 16	Attaining	
			Escherichia coli CFU	235 (FBC)	0 - 493	1 of 16 events (in 1999)	Attaining	
			Lead (total) µg/L	15 (FBC)	<5 - 230	1 of 16	Attaining	
				100 (AgL)	<5 - 230	1 of 16	Attaining	
			Selenium (total) µg/L	2 (A&Ww chronic)	<5 - 5	1 of 1 event	Inconclusive	
			Turbidity (former standard) NTU	50 (A&Ww)	1 - >1000	2 of 16	Attaining	
San Pedro River Charleston - Walnut Gulch AZ15050202-006 A&Ww, FC, FBC, AgL, AgL	ADEQ Ambient Monitoring Below Graveyard Gulch SPSPR095.71 100653	1999 - 1 full suite 2000 - 2 full + 1 partial suite	Turbidity (former standard) NTU	50 (A&Ww)	2 - 258	1 of 4		

TABLE 17. SAN PEDRO - WILLCOX PLAYA - RIO YAQUI WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row A&Ww Inconclusive FC Attaining FBC Attaining Agl Attaining Agl Attaining	2000 4 sampling events	Turbidity (former standard) NTU	50 (A&Ww)	1 - 258	1 of 4	Inconclusive (see comment)	ADEQ collected 4 samples in 2000. Assessed as "attaining some uses" and placed on the Planning List due to exceedance of the former turbidity standard. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.
San Pedro River Babocomari - Dragoon Wash AZ15050202-003 A&Ww, FC, FBC, Agl, AgL	Hargis & Associates CERCLA Monitoring Above Apache Nitrogen (Apache Site 12) SPSPR079.20	1998 - 2 nitrate 1999 - 3 nitrate	No exceedances					Monitoring is upstream of a Superfund site with nitrate contamination problems.
	ADEQ Ambient Monitoring 0.8 miles south of Hwy 80 SPSPR077.66 100281	1999 - 1 full suite 2000 - 2 full + 1 partial suites	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	39 - 660	2 of 4		
	Summary Row A&Ww Attaining FC Attaining FBC Impaired Agl Attaining Agl Attaining	1998 - 2001 9 sampling events	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	39-660	2 of 4 events (in 2000)	Impaired	ADEQ collected 4 samples and Hargis & Associates collected 5 samples at separate sites in 1998 - 2000. Assessed as "Impaired" due to <i>Escherichia coli</i> exceedances.
San Pedro River Dragoon Wash - Tres Alamos AZ15050202-002 A&Ww, FC, FBC, Agl, AgL	Hargis & Associates CERCLA Monitoring At Apache Nitrogen Products (Apache Site 3) SPSPR078.69	1998 - 2 nitrate 1999 - 2 nitrate 2000 - 4 nitrate 2001 - 5 nitrate	Nitrate (as N) mg/L	10 (A&Ww) (site specific standard)	1.6 - 37	4 of 13		Monitoring is downstream of a Superfund site with nitrate contamination problems.
	Hargis & Associates CERCLA Monitoring At Apache Nitrogen Products (Apache Site 4) SPSPR077.76	2001 - 1 nitrate	Nitrate (as N) mg/L	10 (A&Ww) (site specific standard)	35	1 of 1		
	Hargis & Associates CERCLA Monitoring At Apache Nitrogen Products Survey from Site 12 to Site 13 SPSPR078	2001 - 80 sites (1 sample each site) nitrate samples	Nitrate (as N) mg/L	10 (A&Ww) (site specific standard)	<1 - 52	28 of 80 sites exceeded		
	Hargis & Associates CERCLA Monitoring (Apache Site 13) SPSPR076.12	1998 - 3 nitrate 1999 - 2 nitrate 2000 - 4 nitrate 2001 - 5 nitrate	Nitrate (as N) mg/L	10 (A&Ww) (site specific standard)	0.74 - 28	4 of 14		
	Summary Row A&Ww Impaired FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive	1998 - 2002 108 samples 15 sampling events	Nitrate (as N) mg/l	10 (A&Ww)	0.43 - 22.6	9 of 28 (excluding survey) 35 of 108 (including survey)	Impaired	Hargis and Associates collected 108 samples at 83 sites in 1998 - 2001 to monitor the effectiveness of cleanup projects at Apache Nitrogen Products. Assessed as "Impaired" due to nitrate and placed on the Planning List due to missing all core parameters.

TABLE 17. SAN PEDRO - WILLCOX PLAYA - RIO YAQUI WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
San Pedro River Hot Springs Cr - Redfield Cyn AZ15050203-011 A&Ww, FC, FBC, Agl, AgL	ADEQ Ambient Monitoring At Cascabel SPSPR046.96 100289	1999 - 1 full suite 2000 - 4 full suites 2001 - 1 full suite 2002 - 2 full suites	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	5.6 - 10.1 (75 - 113%)	1 of 8		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.
			<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	<1 - 18,000	1 of 7		Flood conditions present.
			Turbidity (former standard) NTU	50 (A&Ww)	2 - >1000	1 of 8		Flood conditions present.
	Summary Row	1999 - 2002	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	<1 - 16,000	1 of 7 events (in 2000)	Inconclusive	ADEQ collected 8 samples in 1999 - 2002. Assessed as "attaining some uses" and placed on the Planning List due to: 1. <i>Escherichia coli</i> exceedances and 2. Former turbidity standard exceedances. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.
	A&Ww Inconclusive FC Attaining FBC Inconclusive Agl Attaining AgL Attaining	8 samples 8 sampling events	Turbidity (former standard) NTU	50 (A&Ww)	2 - >1000	1 of 8	Inconclusive (see comment)	
San Pedro River Aravaipa Creek - Gila River AZ15050203-001 A&Ww, FC, FBC, AgL	ADEQ Ambient Monitoring Below Eskiminzin Wash SPSPR003.74 100726	1998 - 1 partial suite 1999 - 1 full suite 2000 - 5 full suites 2001 - 2 full suites 2002 - 1 full suite	Arsenic (total) µg/L	50 (FBC)	<10 - 63	1 of 9		Lab reporting limits for 8 other mercury samples were too high to use results for assessment. Lab reporting limits for 7 other selenium samples were too high to use results for assessment.
			<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	2 - 2636	2 of 9		
			Lead (total) µg/L	15 (FBC)	<5 - 140	1 of 9		
			Mercury (total) µg/L	0.01 (A&Ww chronic)	<0.5 - 0.67	1 of 1		
			Selenium (total) µg/L	2 (A&Ww chronic)	<5 - 11	2 of 2		
			Turbidity (former standard) NTU	50 (A&Ww)	2 - >1000	1 of 10		
	ADEQ Ambient Monitoring Upstream of Roach Wash SPSPR002.88 101348	2002 - 2 full + 1 turbidity	No exceedances					
	Summary Row	1998 - 2002	Arsenic (total) µg/L	50 (FBC)	<10 - 63	1 of 11	Attaining	ADEQ collected 13 samples at 2 sites in 1998 - 2002. Assessed as "impaired" due to <i>Escherichia coli</i> and selenium exceedances. Placed on the Planning List due to mercury exceedances.
	A&Ww Impaired FC Attaining FBC Impaired AgL Attaining	13 samples 10 sampling events	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	2 - 2636	2 of 11 events (in 2000 and 2001)	Impaired	
			Lead (total) µg/L	15 (FBC)	<5 - 140	1 of 11	Attaining	
			Mercury (dissolved) µg/L	0.01 (A&Ww chronic)	<0.5 - 0.67	1 of 1 event	Inconclusive	

TABLE 17. SAN PEDRO - WILLCOX PLAYA - RIO YAQUI WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
			Selenium (total) µg/L	2 (A&Ww chronic)	<5 - 11	2 of 2 events	Impaired	
			Turbidity (former standard) NTU	50 (A&Ww)	2 - >1000	1 of 13	Attaining	
Spring Canyon Creek headwaters - Mule Gulch AZ15080301-333 A&We, PBC (tributary rule)	ADEQ TMDL Program At confluence with Mule Gulch RMSPC000.10	2000 - 1 field + metals	No exceedances					
	Summary Row A&We Inconclusive PBC Inconclusive	2000 1 sampling event	No exceedances					Samples were collected as part of the Mule Gulch copper TMDL. Any copper or pH loadings would be addressed in the Mule Gulch TMDL.
Ward Canyon Creek headwaters - Turkey Creek AZ15050201-433 A&Wc, FC, FBC, AgL	ADEQ Biocriteria Program Above Salisbury Canyon WPWRC000.31 100682	1998 - 1 partial suite	No exceedances					
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	1998 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Whitewater Draw Gadwell Canyon - unnamed tributary 15080301-003 AZ15080301-004 A&We, PBC, AgL	ADEQ TMDL Program At Double Adobe RMWHD010.02	2000 - 1 partial suite	No exceedances					
	ADEQ TMDL Program At Kings Highway RMWHD006.60 100229	1998 - 1 field + metals	Lead (total) µg/l	15 (FBC)	116	1 of 1		
				100 (AgL)	116	1 of 1		
	Summary Row A&We Inconclusive PBC Inconclusive AgL Inconclusive	1998 - 2000 2 sampling events	Lead (total) µg/l	15 (FBC) 100 (AgL)	116 116	1 of 1 1 of 1	Inconclusive Inconclusive	ADEQ collected 2 samples in 1998-2000. Assessed as "Inconclusive" and placed on the Planning List due to: 1. Lead exceedance and 2. Insufficient monitoring events.
Whitewater Draw unnamed tributary 15080301- 003 to unnamed tributary at 31 20 36 / 109 34 46 AZ15080301-002A A&We, PBC, AgL	ADEQ TMDL Program At Highway 80 (WD-1) RMWHD001.73 100510	1998 - 1 pH + metals	Lead (total) µg/L	15	68	1 of 1		
	Summary Row A&We Inconclusive PBC Inconclusive AgL Inconclusive	1998 1 sampling event	Lead (total) µg/l	15 (FBC)	68	1 of 1	Inconclusive	Insufficient monitoring data to assess. Placed on the Planning List due to lead exceedance.

TABLE 17. SAN PEDRO - WILLCOX PLAYA - RIO YAQUI WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
Whitewater Draw Unnamed tributary at 31 20 36 / 109 34 46 to Mexico border AZ15080301-002B A&Ww, FBC, FC AgL	ADEQ TMDL Program Site WD-1A RMWHD0.012 100512	1998 - 4 pH + metals	Lead (total) µg/L	15	84	1 of 4		
	ADEQ TMDL Program At International Border RMWHD0.011 101069	2000 - 1 arsenic, beryllium	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Attaining	1998 - 2000 5 samples 5 sampling events	Lead (total) µg/l	15 (FBC)	84	1 of 4	Inconclusive	ADEQ collected 5 samples at 2 sites in 1998-2000. Assessed as "attaining some uses" and placed on the Planning List due to: 1. Lead exceedance, and 2. Missing core parameters: <i>Escherichia coli</i> , dissolved oxygen, turbidity/SSC, dissolved cadmium, and total mercury.
Winwood Canyon headwaters-Mule Gulch AZ15080301-340 A&We, PBC (tributary rule)	ADEQ TMDL Program At Mural Hill Tributary (Above mining zone) RMWMC000.66	2000 - 1 pH + metals	Copper (dissolved) µg/l	varies by hardness (A&We)	28	1 of 1		
	ADEQ TMDL Program Above Old Mill Site, (Below mineralized zone) RMWMC000.37	2000 - 1 pH + metals	pH (low) SU	6.5 - 9.0 (A&We, PBC)	6.1	1 of 1		
	Summary Row A&We Inconclusive PBC Inconclusive	2000 2 samples 1 sampling event	Copper (dissolved) µg/l	varies by hardness (A&We)	28	1 of 2 events (occurred in 2000)	Inconclusive	Samples were collected as part of the Mule Gulch copper TMDL. Copper and pH loadings will be addressed in the Mule Gulch TMDL.
			pH (low) SU	6.5 - 9.0 (A&We, PBC)	6.1	1 of 2	Inconclusive	
LAKE MONITORING DATA								
Riggs Flat Lake AZL15050201-1210 A&Wc, FC, FBC, Agl, AgL	ADEQ Lakes Program WPRIG-A 100074	1998 - 1 partial suite	No exceedances					
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive	1998 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Snow Flat Lake AZL15050201-1420 A&Wc, FBC, FC, Agl, AgL	ADEQ Lakes Program WPSNQ-A 100084	1998 - 1 full suite	No exceedances					
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive	1998 1 sampling event	No exceedances					Insufficient monitoring data to assess.

TABLE 17. SAN PEDRO - WILLCOX PLAYA - RIO YAQUI WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
Twin Pond AZ15080302-0001 A&Ww, FC, FBC (tributary rule)	USGS Ambient Monitoring SPTWP-USGS 101581	2002 - 1 full suite	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive	2002 1 sampling event	No exceedances					Insufficient monitoring data to assess.

TABLE 18. SAN PEDRO-WILLCOX PLAYA-RIO YAQUI WATERSHED – ASSESSMENT, PLANNING LIST, AND 303(d) STATUS

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
SAN PEDRO-WILLCOX PLAYA-RIO YAQUI WATERSHED – STREAM ASSESSMENTS				
Aravaipa Creek Stowe Gulch - Wilderness Area 16 miles AZ15050203-004B Unique Water (previously listed as Aravaipa Canyon Creek)	A&Ww Attaining FC Attaining FBC Attaining AgL Attaining Category 1 – Attaining All Uses			
Aravaipa Creek Wilderness Area - San Pedro River 13 miles AZ15050203-004C (previously listed as Aravaipa Canyon Creek)	A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive Category 3 -- Inconclusive	On the Planning List due to <u>missing core parameters</u> : <i>Escherichia coli</i> , dissolved oxygen, dissolved metals (cadmium, copper, and zinc), and total metals (mercury, arsenic, chromium, copper, and lead).		
Bass Canyon Creek tributary at 32 26 06 / 110 13 18 - Hot Springs Canyon Creek 12 miles AZ15050203-899B (Reich was spill into warmwater and coldwater segments since the last assessment. No current data in 899A.)	A&Ww Attaining FC Attaining FBC Attaining AgL Attaining Category 1 – Attaining All Uses			
Bass Canyon, unnamed tributary of headwaters - Bass Canyon Creek 1 mile AZ15050203-935	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Brewery Gulch Wildcat Canyon - Mule Gulch 1 mile AZ15080301-337	A&We Impaired PBC Inconclusive Category 5 – Impaired		Copper added to the 2004 303(d) List by EPA. Samples collected for Mule Gulch TMDL study. Copper loadings are being addressed as part of the Mule Gulch TMDL report (5 of 5 copper samples and 1 of 5 pH results did not meet standards).	
Bushman Canyon headwaters - end of Unique Water 10 miles AZ15050203-010A Unique Water	A&Ww Attaining FC Attaining FBC Attaining AgL Attaining Category 1 – Attaining All Uses	Remove beryllium from the Planning List, as the standard was revised in 2002. No exceedances based on the new standard.		
C - Canyon headwaters - Mule Gulch 0.5 miles AZ15080301-342	A&We Inconclusive PBC Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		Sample collected for Mule Gulch TMDL study. Copper and pH loadings will be addressed in the Mule Gulch TMDL report (1 of 1 samples exceeded copper standard).
Copper Creek headwaters - Prospect Canyon 7 miles AZ15050203-022A	A&Ww Inconclusive FC Attaining FBC Attaining AgL Attaining Category 2 – Attaining Some Uses	On the Planning List due to <u>chronic selenium</u> exceedance (1 of 1 sampling event).		
Double R Canyon Creek headwaters - Bass Canyon Creek 5 miles AZ15050203-902	A&Ww Attaining FC Attaining FBC Inconclusive Category 2 – Attaining Some Uses	On the Planning List due to <u>missing core parameter</u> : <i>Escherichia coli</i> . Remove dissolved oxygen, as site investigation revealed that the low dissolved oxygen was naturally occurring due to ground water upwelling, and not anthropogenic causes.		

TABLE 18. SAN PEDRO-WILLCOX PLAYA-RIO YAQUI WATERSHED – ASSESSMENT, PLANNING LIST, AND 303(d) STATUS				
SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Dubacher Canyon headwaters - Mule Gulch 1 miles AZ15080301-075	A&We Inconclusive PBC Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		Samples collected for Mule Gulch TMDL study. Copper and pH loadings will be addressed in the Mule Gulch TMDL report (1 of 1 copper and pH samples did not meet standards).
Grant Creek headwaters - tributary at 32 38 09 / 109 56 35 13 miles AZ15050201-033A	A&Wc Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive AgL Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 2 samples).		
Hendricks Gulch headwaters - Mule Gulch 0.5 miles AZ15080301-335	A&We Inconclusive PBC Inconclusive Category 3 — Inconclusive			Samples collected for Mule Gulch TMDL study. Copper and pH loadings will be addressed in the Mule Gulch TMDL report (1 of 3 copper and 1 of 2 pH samples did not meet standards).
Hot Springs Canyon Creek headwaters - San Pedro River 26 miles AZ15050203-013	A&Ww Attaining FC Attaining FBC Attaining AgL Attaining Category 1 — Attaining All Uses			
Leslie Canyon Creek headwaters - Whitewater Draw 25 miles AZ15080301-007	A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Miller Canyon Creek headwaters - Broken Arrow Ranch Road 4 miles AZ15050202-409A	A&Wc Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive AgL Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Morales Creek headwaters - Mule Gulch 2 miles AZ15080301-331	A&We Inconclusive PBC Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		Samples collected for Mule Gulch TMDL study. Copper loadings will be addressed in the Mule Gulch TMDL report (1 of 1 copper sample exceeded standards).
Mule Gulch headwaters - above Lavender Pit 4 miles AZ15080301-090A (Reach previously known as 090A, now split into 090A and 090B. Designated uses were also modified.)	A&Ww Impaired PBC Inconclusive AgL Inconclusive Category 5 — Impaired	On the Planning List due to missing core parameters: <i>Escherichia coli</i> , dissolved oxygen, turbidity/SSC, and total mercury. Remove lead from the Planning List (exceedance occurred in the segment below before reach was split).	On the 303(d) List (since 1990) for copper. (Acute standard exceeded in 7 of 15 samples, and chronic standard exceeded in 8 of 15 samples.) ADEQ is currently working on a TMDL and site specific standards for this reach. Delist pH and zinc from the 303(d) List (10 zinc exceedances in 15 samples and only 1 low pH in 10 samples).	

TABLE 18. SAN PEDRO-WILLCOX PLAYA-RIO YAQUI WATERSHED – ASSESSMENT, PLANNING LIST, AND 303(d) STATUS

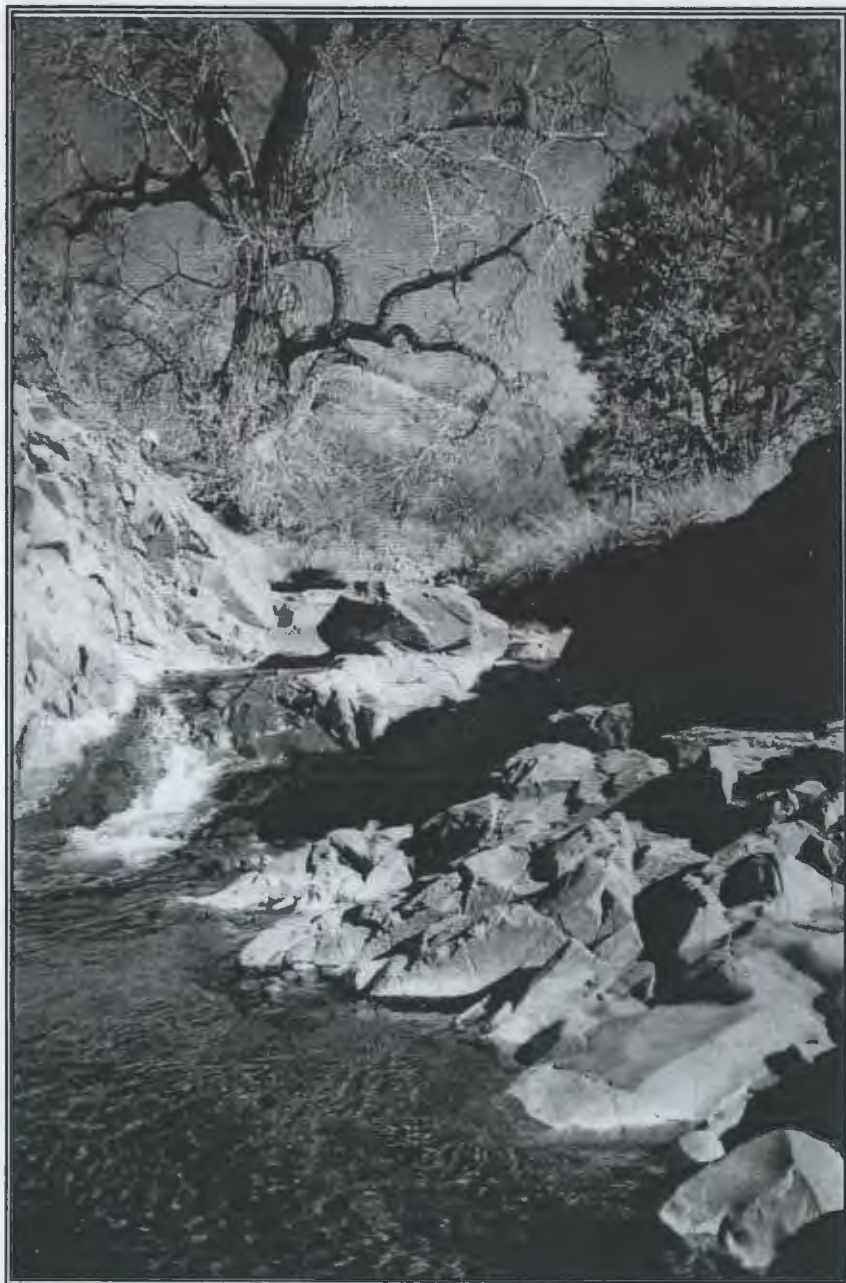
SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Mule Gulch above Lavender Pit - Bisbee WWTP 1 mile AZ15080301-090B (Reach previously known as 090A, now split into 090A and 090B. Designated uses were also modified.)	A&We Impaired PBC Impaired Category 5 – Impaired	On the Planning List due to <u>dissolved lead</u> exceedance (1 of 2 samples).	On the 303(d) List (since 1990) for <u>copper</u> . (Acute copper exceedances in 8 of 8 sampling events and total copper exceedances in 7 of 8 samples). EPA placed <u>pH</u> on the list based on 7 of 15 exceedances, although Arizona's Impaired Water Identification Rule requires at least 20 samples to make a listing for pH. However, once listed, the reach cannot be delisted until a TMDL is complete or pH data indicate designated uses are being attained. In current data, pH exceeded standards in 7 of 7 samples. <u>Delist zinc</u> . No exceedances in the last 3 years of sampling (0 in 4 samples). ADEQ is currently working on a TMDL and site specific standards for this reach.	
Mule Gulch Bisbee WWTP - Highway 80 Bridge 4 miles AZ15080301-090C (Reach previously known as 090B, now 090C and 090D. Designated uses were also modified.)	A&Wedw Impaired PBC Impaired Category 5 – Impaired	On the Planning List due to: 1. Chronic lead exceedance (1 of 6 sampling events) and total lead exceedance (1 of 5 samples). 2. Missing core parameters: <i>Escherichia coli</i> , turbidity/SSC, and dissolved oxygen.	On the 303(d) List (since 1990) for <u>copper, zinc, and</u> <u>low pH</u> . (Acute and chronic copper exceedances in 12 of 12 sampling events and total copper exceedances in 6 of 21 samples. Low pH in 5 of 23 samples. Acute and chronic zinc exceedances in 5 of 12 sampling events.) <u>Add cadmium</u> to the 303(d) List. (Acute cadmium exceedances in 3 of 8 sampling events and chronic cadmium exceedances in 6 of 8 sampling events.) ADEQ is currently working on a TMDL and site specific standards for this reach.	
Mule Gulch Highway 80 bridge - Whitewater Draw 5 miles AZ15080301-090D (Reach previously part of 090B, now split into 090C and 090D. Designated uses were also modified.)	A&We Inconclusive PBC Inconclusive AgL Inconclusive Category 3 – Inconclusive	On the Planning List due to: 1. <u>Copper</u> exceedances (1 of 1 samples) and 2. Insufficient monitoring.		
Mural and Grassy Hill tributary headwaters - Mule Gulch 2 miles AZ15080301-344	A&We Inconclusive PBC Inconclusive Category 3 – Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		Samples collected for Mule Gulch TMDL study. <u>Copper and pH</u> loadings will be addressed in the Mule Gulch TMDL report (1 of 1 copper sample exceeded standards).
OK and Youngblood headwaters - Brewery Gulch 1 mile AZ15080301-1000	A&We Inconclusive PBC Inconclusive Category 3 – Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		Samples collected for Mule Gulch TMDL study. <u>Copper and pH</u> loadings will be addressed in the Mule Gulch TMDL report (1 of 1 copper sample exceeded standards.)
Ramsey Canyon Creek headwaters - Forest Rd. 110 4 miles AZ15050202-404A (Reach was split into warmwater and coldwater segments since the last assessment. No current data in 404B.)	A&Wc Inconclusive FC Attaining FBC Attaining AgL Attaining Category 2 – Attaining Some Uses	On the Planning List due to <u>missing core parameter</u> : dissolved zinc.		
Rucker Canyon Creek headwaters - Whitewater Draw 10 miles AZ15080301-288	A&Wc Attaining FC Attaining FBC Attaining AgL Attaining Category 1 – Attaining All Uses			

TABLE 18. SAN PEDRO-WILLCOX PLAYA-RIO YAQUI WATERSHED – ASSESSMENT, PLANNING LIST, AND 303(d) STATUS

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
San Pedro River Mexico border - Charleston 28 miles AZ15050202-008	A&Ww Impaired FC Attaining FBC Attaining AgI Attaining AgL Attaining Category 5 – Impaired	On the Planning List due to chronic <u>selenium</u> exceedance (1 of 1 sampling event). Remove beryllium from the Planning List. Standard revised in 2002. No exceedances of the new standard.	Add <u>copper</u> to the 303(d) List for chronic copper exceedances (2 of 16 sampling events).	
San Pedro River Charleston - Walnut Gulch 9 miles AZ15050202-006	A&Ww Inconclusive FC Attaining FBC Attaining AgI Attaining AgL Attaining Category 2 – Attaining Some Uses	On the Planning List due to exceedance of the former turbidity standard (1 of 4 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.		
San Pedro River Babocoman Creek - Dragoon Wash 17 miles AZ15050202-003	A&Ww Attaining FC Attaining FBC Impaired AgI Attaining AgL Attaining Category 5 – Impaired	Remove turbidity from the Planning List. No exceedances in 4 samples.	Add <u>Escherichia coli</u> to the 303(d) List due to exceedances in 2 of 4 sampling events (occurred in 2000).	
San Pedro River Dragoon Wash - Tres Alamos Wash 16 miles AZ15050202-002	A&Ww Impaired FC Inconclusive FBC Inconclusive AgI Inconclusive AgL Inconclusive Category 5 – Impaired	On the Planning List due to <u>missing all core parameters</u> . Added in 2002 due to exceedances of the former <u>fecal coliform</u> and turbidity standards. No current <u>Escherichia coli</u> , turbidity or SSC data. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.	On the 303(d) List (since 1990) for <u>nitrate</u> . Currently, 35 of 108 samples exceeded nitrate standards. Nitrate sampling was conducted to determine the effectiveness of Superfund mitigation efforts. Contaminated ground water is seeping into the San Pedro near the Apache Nitrogen Products site.	
San Pedro River Hot Springs Creek - Redfield Canyon 13 miles AZ15050203-011	A&Ww Inconclusive FC Attaining FBC Inconclusive AgI Attaining AgL Attaining Category 2 – Attaining Some Uses	On the Planning List due to: 1. <u>Escherichia coli</u> exceedance (1 of 7 sampling events, occurred in 2000). 2. Former <u>turbidity</u> standard exceedance (1 of 8 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.		
San Pedro River Aravaipa Creek - Gila River 15 miles AZ15050203-001	A&Ww Impaired FC Attaining FBC Impaired AgI Attaining AgL Attaining Category 5 – Impaired	On the Planning List due to <u>chronic mercury</u> exceedance (1 of 1 sampling event). Remove turbidity from the Planning List. One exceedance in 13 samples indicates support of designated uses.	Add <u>Escherichia coli</u> to the 303(d) List due to exceedances in 2 of 11 sampling events (occurred in 2000 and 2001). Add <u>selenium</u> to the 303(d) List due to chronic selenium exceedances (2 of 2 sampling events).	
Spring Canyon Creek headwaters - Mule Gulch 1 mile AZ15080301-333	A&We Inconclusive PBC Inconclusive Category 3 – Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		Samples collected for Mule Gulch TMDL study. <u>Copper</u> or pH loadings will be addressed in the Mule Gulch TMDL report. (No exceedances reported in 1 sample.)
Ward Canyon Creek headwaters - Turkey Creek 3 miles AZ15050201-433	A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive Category 3 – Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Whitewater Draw Gadwell Canyon - unnamed tributary 15080301-003 22 miles AZ15080301-004 (Designated uses and reach delineations have changed on this stream since the last assessment.)	A&We Inconclusive PBC Inconclusive AgL Inconclusive Category 3 – Inconclusive	On the Planning List due to: 1. Insufficient monitoring data to assess (only 2 samples). 2. <u>Lead</u> exceedance (1 of 1 sample).		

TABLE 18. SAN PEDRO-WILLCOX PLAYA-RIO YAQUI WATERSHED – ASSESSMENT, PLANNING LIST, AND 303(d) STATUS

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Whitewater Draw unnamed tributary 15080301-003 to unnamed tributary at 31 20 36 / 109 34 46 6 miles AZ15080301-002A (Designated uses and reach delineations have changed on this stream since the last assessment.)	A&We Inconclusive PBC Inconclusive AgL Inconclusive Category 3 – Inconclusive	On the Planning List due to: 1. Insufficient monitoring data to assess (only 1 sample). 2. Added in 2002 due to: <u>lead, zinc, manganese, beryllium, and turbidity</u> exceedances, <u>low dissolved oxygen</u> and <u>missing core parameters</u> . Remove manganese and beryllium from the Planning List due to revised standards adopted in 2002. The old beryllium and manganese data do not exceed the new standards. Remove dissolved oxygen and turbidity from the Planning List as these standards do not apply in an ephemeral water. (Change in designated uses.)		
Whitewater Draw unnamed tributary at 31 20 36 / 109 34 46 to Mexico border 0.4 miles AZ15080301-002B (This reach was split into 2 segments and designated uses have changed on this stream since the last assessment.)	A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Attaining Category 2 – Attaining Some Uses	On the Planning List due to: 1. <u>Lead</u> exceedance (1 of 4 samples). 2. <u>Low dissolved oxygen</u> (no current data, added to the Planning List in 2002 after being delisted from 303(d) List) 3. <u>Turbidity</u> exceedances (no current data, added to the Planning List in 2002 after being delisted from the 303(d) List). 4. <u>Missing core parameters</u> : <i>Escherichia coli</i> , dissolved oxygen, turbidity/SSC, dissolved cadmium, and total mercury. Remove zinc, manganese, and beryllium from the Planning List. No exceedances in 5 samples. (New manganese and beryllium standards.)		
Winwood Canyon headwaters - Mule Gulch 2 mile AZ15080301-340	A&We Inconclusive PBC Inconclusive Category 3 – Inconclusive	On the Planning List due to insufficient monitoring data to assess (2 samples).		Samples collected for Mule Gulch TMDL study. Copper and pH loadings will be addressed in the Mule Gulch TMDL report (1 of 2 copper samples exceeded standards).
SAN PEDRO-WILLCOX PLAYA-RIO YAQUI WATERSHED – LAKE ASSESSMENTS				
Riggs Flat Lake 9 acres AZL15050201-1210	A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive AgL Inconclusive Category 3 – Inconclusive Trophic status – Eutrophic	On the Planning List due to: 1. Insufficient monitoring data to assess (only 1 sample). 2. Added in 2002 due to former <u>turbidity</u> standard exceedance (1 of 1 sample). Causes and sources of turbidity will be investigated during the next monitoring cycle for this watershed.		
Snow Flat Lake 1 acre AZL15050201-1420	A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive AgL Inconclusive Category 3 – Inconclusive Trophic status – Mesotrophic	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Twin Pond 1 acre AZ15080302-0001	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 – Inconclusive Trophic status not calculated	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		



Redrock Canyon Creek, near Patagonia, Arizona.

The Santa Cruz-Rio Magdalena-Rio Sonoyta Watershed

This watershed is composed of two drainages: the Santa Cruz River which flows north to the Gila River and a series of streams that flow south and eventually combine to form the Rio Magdalena and the Rio Sonoyta in Mexico.

Groundwater pumping has eliminated natural perennial flow in most of the mainstem Santa Cruz River. Treated wastewater effluent provides the perennial flow below discharges from the cities of Nogales and Tucson.

Most of the population in this 11,100 square-mile watershed is clustered around metropolitan Tucson (approximately 844,000 people in 2000 census), Nogales, Arizona and Sonora, Mexico (370,000 people, mostly in Mexico). Land ownership is approximately: 20% private land, 15% state land, 25% federal land, and 40% Tribal land. Grazing is the dominant land use, with irrigated crop production near stream beds. Active and abandoned mines are scattered throughout the watershed. There are eight wilderness areas along with national forests and national monuments with restricted land uses.

Elevations range from 9,156 feet (above sea level) at Mount Lemmon to about 1,100 feet at the Gila River. Except for a string of high mountains in the east, most of the watershed is below 5,000 feet, with low desert flora and fauna and warmwater aquatic communities where perennial waters exist.

The assessment – Assessments were completed for 32 stream reaches and seven lakes in this watershed. Of the 235 stream miles assessed, 38 miles were attaining all uses (three reaches) and 70 miles (14 reaches) were assessed as impaired or not attaining a use. Of the 557 lake acres assessed, none were assessed as attaining all uses and 320 acres (five lakes) were assessed as impaired or not attaining a use. All others were inconclusive or attaining some uses.

A watershed assessment map follows on the next page, illustrating stream and lake assessments by category. The Santa Cruz **monitoring table (Table 19)** following the map summarizes the water quality data used in the assessment. It is followed by the **assessment table (Table 20)**, which bridges current assessments with past assessments and impaired water identification. Important to note in this table are comments regarding previous 303(d) lists (what has been added and removed), category designations (1 through 5), references to potential actions by EPA, and status of TMDLs.

Detailed information on how to use these tables is found at the beginning of this chapter (p. IV-1). Assessment methods and criteria can be found in Chapter III.

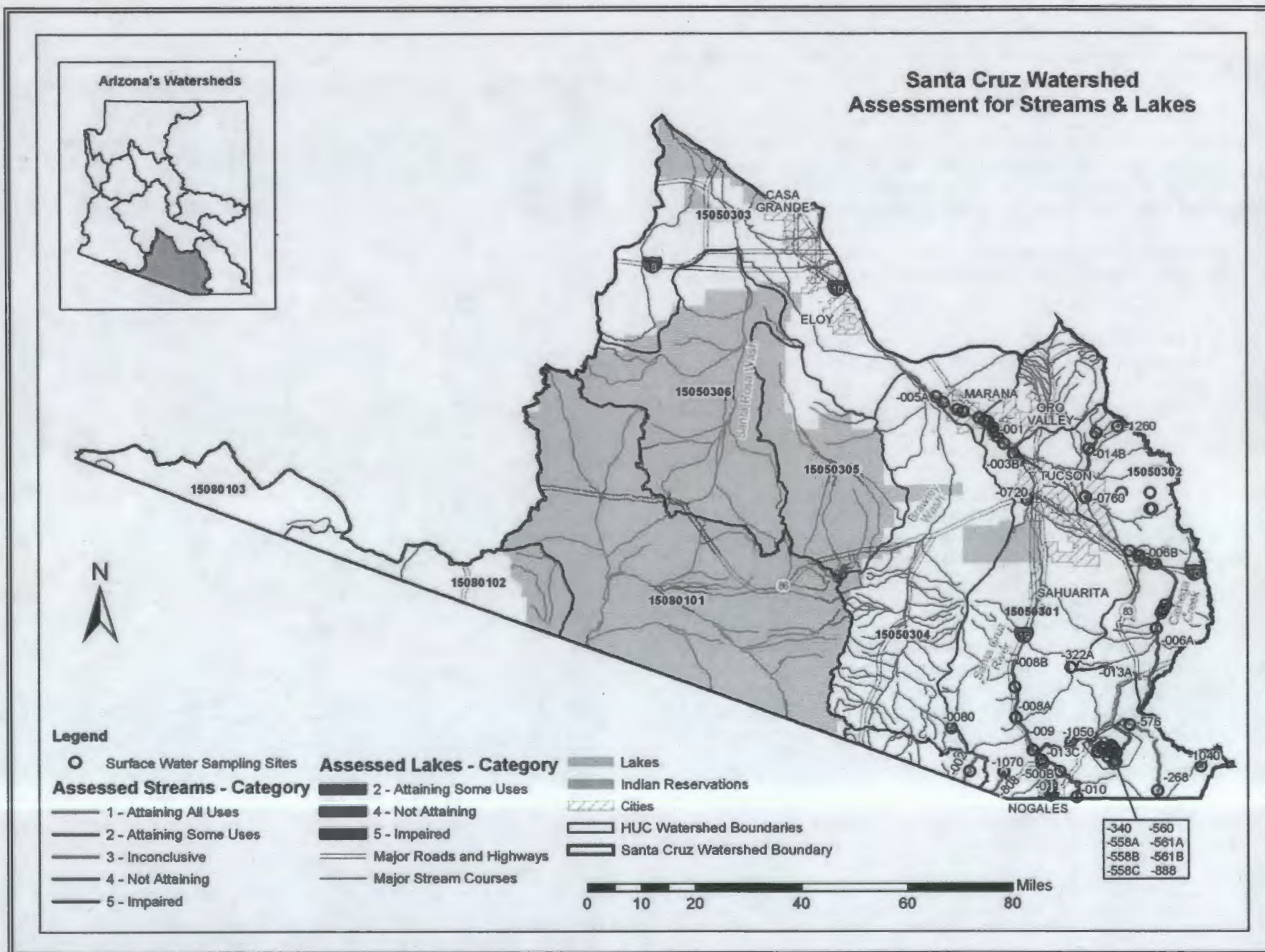


Figure 22. Watershed monitoring and assessments

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
STREAM MONITORING DATA								
Alum Gulch headwaters - 31 28 20 / 110 43 51 AZ15050301-561A A&We, PBC, AgL	ADEQ TMDL Program Below Trench Camp Mine SCALG005.90	1999 - 1 partial suite	pH SU	6.5 - 9.0 (A&We, PBC, AgL)	5.9	1 of 1		
			Zinc (dissolved) µg/L	varies by hardness (A&We)	2500	1 of 1		
	ADEQ TMDL Program Below January adit, Above Humboldt Canyon SCALG005.58	1999 - 1 partial suite 2000 - 1 partial suite	Cadmium (total) µg/L	84 (FC)	140 - 180	2 of 2		
				50 (AgL)		2 of 2		
			Copper (dissolved) µg/L	varies by hardness (A&We)	110 - 400	2 of 2		
			pH SU	6.5 - 9.0 (A&We, PBC, AgL)	4.5 - 5.3	2 of 2		
			Zinc (dissolved) µg/L	varies by hardness (A&We)	39,000 - 56,000	2 of 2		
			Zinc (total) µg/L	25,000 (AgL)	42,000 - 56,000	2 of 2		
	ADEQ TMDL Program Below Humboldt Canyon, Above Alum Falls SCALG005.30	1999 - 1 partial suite	Cadmium (total) µg/L	84 (FC)	180	1 of 1		
				50 (AgL)		1 of 1		
			Copper (dissolved) µg/L	varies by hardness (A&We)	1200	1 of 1		
			Copper (total) µg/L	500 (AgL)	1200	1 of 1		
			pH SU	6.5 - 9.0 (A&We, PBC, AgL)	3.6	1 of 1		
			Zinc (dissolved) µg/L	varies by hardness (A&We)	44,000	1 of 1		
			Zinc (total) µg/L	25,000 (AgL)	41,000	1 of 1		

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
	Summary Row A&We Not attaining PBC Not attaining AgL Not attaining	1999 - 2000 4 samples 2 sampling events	Cadmium (total) µg/L	84 (FC)	10 - 180	3 of 4	Inconclusive (Not attaining)	ADEQ collected 4 samples at 3 sites in 1999-2000. TMDLs for cadmium, copper, zinc and pH were approved by EPA in 2003. Assessed as "not attaining" due to copper, cadmium and zinc exceedances, and low pH. Although current data for cadmium and pH are "inconclusive," this reach will remain "not attaining" until data indicate that all uses are attaining for parameters addressed in the TMDL. Placed on the Planning List for TMDL follow-up monitoring and missing core parameter: total lead.
				50 (AgL)		3 of 4	Inconclusive (Not attaining)	
			Copper (dissolved) µg/L	varies by hardness (A&We)	13 - 1200	3 of 4 samples 2 of 2 events (In 1999 - 2000)	Not attaining	
			Copper (total) µg/L	500 (AgL)	63 - 1200	1 of 4	Inconclusive (Not attaining)	
			pH SU	6.5 - 9.0 (A&We, PBC, AgL)	3.6 - 5.9	4 of 4	Inconclusive (Not attaining)	
			Zinc (dissolved) µg/L	varies by hardness (A&We)	2500 - 56,000	4 of 4 samples 2 of 2 events (In 1999 - 2000)	Not attaining	
			Zinc (total) µg/L	25,000 (AgL)	2900 - 56,000	3 of 4	Inconclusive (Not attaining)	
Alum Gulch 31 28 20 / 110 43 51 - 31 29 17 / 110 44 25 AZ15050301-561B A&Ww, FC, FBC, AgL	ADEQ TMDL Program Below Alum Falls, Above World's Fair Mine SCALG004.98	1999 - 1 partial suite	Cadmium (dissolved) µg/L	varies by hardness (A&Ww acute)	160	1 of 1		
				varies by hardness (A&Ww chronic)		1 of 1		
			Cadmium (total) µg/L	84 (FC)	160	1 of 1		
				50 (AgL)		1 of 1		
			Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	1500	1 of 1		
				varies by hardness (A&Ww chronic)		1 of 1		
			Copper (total) µg/L	1300 (FBC)	1400	1 of 1		
				500 (AgL)		1 of 1		

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
			pH SU	6.5 - 9.0 (A&Ww, FBC, AgL)	3.5	1 of 1		
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	46,000	1 of 1		
				varies by hardness (A&Ww chronic)		1 of 1		
			Zinc (total) µg/L	25,000 (AgL)	49,000	1 of 1		
	ADEQ TMDL Program Below World's Fair Mine SCALG004.82	1998 - 3 partial suites	Cadmium (dissolved) µg/L	varies by hardness (A&Ww acute)	28 - 194	3 of 3		
				varies by hardness (A&Ww chronic)		3 of 3		
			Cadmium (total) µg/L	84 (FC)	27 - 174	1 of 3		
				50 (AgL)		1 of 3		
			Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	881 - 2110	3 of 3		
				varies by hardness (A&Ww chronic)		3 of 3		
			Copper (total) µg/L	1300 (FBC)	799 - 2140	1 of 3		
				500 (AgL)		3 of 3		
			pH SU	6.5 - 9.0 (A&Ww, FBC, AgL)	3.3 - 3.7	3 of 3		
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	6110 - 56,200	3 of 3		
				varies by hardness (A&Ww chronic)		3 of 3		
			Zinc (total) µg/L	25,000 (AgL)	5730 - 50,600	1 of 3		
	ADEQ TMDL Program 200 meters below World's Fair Mine SCALG004.61	1999 - 1 partial suite 2000 - 1 partial suite	Cadmium (dissolved) µg/L	varies by hardness (A&Ww acute)	170 - 220	2 of 2		
				varies by hardness (A&Ww chronic)		2 of 2		

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED - 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
			Cadmium (total) µg/L	84 (FC)	170 - 290	2 of 2		
				50 (AgL)		2 of 2		
			Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	1600 - 2000	2 of 2		
				varies by hardness (A&Ww chronic)		2 of 2		
			Copper (total) µg/L	1300 (FBC)	1900 - 2100	2 of 2		
				500 (AgL)		2 of 2		
			pH SU	6.5 - 9.0 (A&Ww, FBC, AgL)	3.2	2 of 2		
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	49,000 - 53,000	2 of 2		
				varies by hardness (A&Ww chronic)		2 of 2		
			Zinc (total) µg/L	25,000 (AgL)	45,000 - 54,000	2 of 2		
	Summary Row A&Ww Not attaining FC Not attaining FBC Not attaining AgL Not attaining	1998 - 2000 6 samples 5 sampling events	Cadmium (dissolved) µg/L	varies by hardness (A&Ww acute)	26 - 220	5 of 5 events (in 1998 - 2000)	Not attaining	ADEQ collected 6 samples at 3 sites in 1998-2000. TMDLs for cadmium, copper, zinc and pH were approved by EPA in 2003. Assessed as "not attaining" due to cadmium, copper and zinc exceedances, and low pH. Although current data for cadmium and pH are "inconclusive," this reach will remain "not attaining" until data indicate that all uses are attaining for parameters addressed in the TMDL. Placed on the Planning List for TMDL follow-up monitoring and for missing core parameters: <i>Escherichia coli</i> , total metals (lead and mercury), and turbidity/SSC.
				varies by hardness (A&Ww chronic)		5 of 5 events	Not attaining	
			Cadmium (total) µg/L	84 (FC)	27 - 290	4 of 6	Inconclusive (Not attaining)	
				50 (AgL)		4 of 6	Inconclusive (Not attaining)	
			Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	881 - 2110	5 of 5 events (in 1998 - 2000)	Not attaining	
				varies by hardness (A&Ww chronic)		5 of 5 events	Not attaining	
			Copper (total) µg/L	1300 (FBC)	799 - 2140	4 of 6	Inconclusive (Not attaining)	
				500 (AgL)		6 of 6	Inconclusive (Not attaining)	
			pH SU	6.5 - 9.0 (A&Ww, FBC, AgL)	3.2 - 3.7	6 of 6	Inconclusive (Not attaining)	

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	6110 - 56,200	5 of 5 events (in 1998 - 2000)	Not attaining	
				varies by hardness (A&Ww chronic)		5 of 5 events	Not attaining	
			Zinc (total) µg/L	25,000 (AgL)	5730 - 54,000	4 of 6	Inconclusive (Not attaining)	
Chimenea Creek headwaters - Rincon Creek AZ15050302-140 A&Ww, FC, FBC (tributary rule)	USGS Ambient Monitoring At Saguaro National Park SCCHM004.75 101593	2002 - 1 partial suite	No exceedances					
	USGS Ambient Monitoring Near Madrona ranger station SCCHM002.25 101584	2002 - 1 partial suite	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive	2002 2 sampling events	No exceedances					
Cienega Creek headwaters - Gardner Canyon AZ15050302-006A A&Ww, FC, FBC, AgL Unique Water	ADEQ Ambient Monitoring SCCIE014.39 101176	2000 - 1 full suite 2001 - 5 full suites 2002 - 1 full suite	No exceedances					
	ADEQ SEM Program Below Stevenson Canyon SCCIE12.38 100601	1998 - 1 partial suite	No exceedances					
	ADEQ Ambient Monitoring Below Narrows SCCIE011.80 100600	1998 - 1 partial suite	No exceedances					
	ADEQ Ambient Monitoring SCCIE010.20 101177	2000 - 1 full suite 2001 - 4 full suites 2002 - 1 full suite	Turbidity (former standard) NTU	50 (A&Ww)	1 - 54	1 of 6		
	Summary Row A&Ww Attaining FC Attaining FBC Inconclusive AgL Attaining	1998 - 2002 15 samples 8 sampling events	Turbidity (former standard) NTU	50 (A&Ww)	1 - 54	1 of 14	Attaining	

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
Cienega Creek Gardner Canyon - USGS gage station (Pantano Wash) AZ15050302-006B A&Ww, FBC, FC, AgL	ADEQ Ambient Monitoring Below tilted beds SCCIE003.55 100599	1998 - 1 partial suite	No exceedances					
	ADEQ Ambient Monitoring SCCIE002.66 101178	2000 - 1 full suite 2001 - 4 full suites 2002 - 1 full suite	Dissolved oxygen mg/L	>6.0 (90% saturation)	5.5 - 9.6 (80 - 109%)	1 of 6		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.
	ADEQ Ambient Monitoring SCCIE001.49 101179	2000 - 1 full suite 2001 - 4 full suites 2002 - 1 full suite	No exceedances					
	ADEQ Ambient Monitoring Above Davidson Canyon SCCIE001.20 100598	1998 - 1 partial suite	Dissolved oxygen mg/L	>6.0 (90% saturation)	5.4 (65%)	1 of 1		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.
	ADEQ Ambient Monitoring At Marsh Station Rd. SCCIE001.07 100263	1998 - 1 partial suite	No exceedances					
	ADEQ Ambient Monitoring Above diversion dam SCCIE000.42 100595	1998 - 1 partial suite	Dissolved oxygen mg/L	>6.0 (90% saturation)	4.6 (57%)	1 of 1		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.
	Summary Row A&Ww Attaining FC Attaining FBC Inconclusive AgL Attaining	1998 - 2002 16 samples 7 sampling events	No exceedances					ADEQ collected 16 samples at 6 sites in 1998-2002. Assessed as "attaining some uses" due to missing core parameter: <i>E. coli</i> .
Cox Gulch headwaters - Three R Canyon AZ15050301-560 A&Ww, FBC, FC (tributary rule)	ADEQ TMDL Program Above European Mine Canyon SCCIE001.04	1999 - 1 partial suite	Cadmium (dissolved) µg/L	varies by hardness (A&Ww acute)	25	1 of 1		
				varies by hardness (A&Ww chronic)		1 of 1		
			Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	6000	1 of 1		
				varies by hardness (A&Ww chronic)		1 of 1		
			Copper (total) µg/L	500 (AgL)	8700	1 of 1		
				1300 (FBC)		1 of 1		
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	5900	1 of 1		
				varies by hardness (A&Ww chronic)		1 of 1		

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	ADEQ TMDL Program Below European Mine Canyon SCCIE000.85	1999 - 1 partial suite 2000 - 1 partial suite	Cadmium (dissolved) µg/L	varies by hardness (A&Ww acute)	15 - 60	2 of 2		
				varies by hardness (A&Ww chronic)		2 of 2		
			Cadmium (total) µg/L	50 (AgL)	72	1 of 2		
			Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	8200 - 18,000	2 of 2		
				varies by hardness (A&Ww chronic)		2 of 2		
			Copper (total) µg/L	500 (AgL)	8600 - 18,000	2 of 2		
				1300 (FBC)		2 of 2		
			pH SU	6.5 - 9.0 (A&Ww, FBC)	3.3	1 of 1		
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	3200 - 11,000	2 of 2		
				varies by hardness (A&Ww chronic)		2 of 2		
	Summary Row A&Ww Not attaining FC Inconclusive FBC Not attaining	1999 - 2000 3 samples 2 sampling events	Cadmium (dissolved) µg/L	varies by hardness (A&Ww acute)	15 - 60	3 of 3 samples 2 of 2 events (in 1999 and 2000)	Not attaining	ADEQ collected 3 samples at 2 sites in 1999-2000. Cadmium, copper, pH, and zinc loadings on this reach were addressed in the TMDL for Three R Canyon approved by EPA in 2003. Assessed as "not attaining" due to cadmium, copper, pH, and zinc exceedances. Placed on the Planning List for TMDL follow up monitoring and missing core parameters: <i>Escherichia coli</i> , dissolved oxygen, total mercury, turbidity/SSC.
				varies by hardness (A&Ww chronic)	15 - 60	3 of 3 samples 2 of 2 events	Not attaining	
			Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	8000 - 18,000	3 of 3 samples 2 of 2 events (in 1999 - 2000)	Not attaining	
				varies by hardness (A&Ww chronic)	8000 - 18,000	3 of 3 samples 2 of 2 events	Not attaining	
			Copper (total) µg/L	1300 (FBC)	8600 - 18,000	3 of 3	Inconclusive (Not attaining*)	
			pH SU	6.5 - 9.0 (A&Ww, FBC)	3.3	1 of 1	Inconclusive (Not attaining*)	

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	3200 - 11,000	3 of 3 samples 2 of 2 events (in 1999 - 2000)	Not attaining	
				varies by hardness (A&Ww chronic)	3200 - 11,000	3 of 3 samples 2 of 2 events	Not attaining	
Cox Gulch, <u>unnamed tributary of headwaters-Cox Gulch</u> AZ15050301-877 A&We, PBC (tributary rule)	ADEQ TMDL Program Above Cox Gulch SCUCX000.01	1999 - 1 partial suite	Copper (dissolved) µg/L	varies by hardness (A&We)	7600	1 of 1		
			Copper (total) µg/L	1300 (PBC)	7600	1 of 1		
			Zinc (dissolved) µg/L	varies by hardness (A&We)	2900	1 of 1		
	Summary Row A&We Not attaining PBC Not attaining	1999 1 sampling event	Copper (dissolved) µg/L	varies by hardness (A&We)	7600	1 of 1 event (in 1999)	Inconclusive (Not attaining*)	Insufficient monitoring data to assess. Copper and zinc loadings from this reach were addressed in the TMDL for Three R Canyon approved by EPA in 2003.
			Copper (total) µg/L	1300 (PBC)	7600	1 of 1	Inconclusive (Not attaining*)	*Although current data copper and zinc are "inconclusive," the uses are assessed as "not attaining" until data indicate that all uses are being attained for parameters addressed in the TMDL.
			Zinc (dissolved) µg/L	varies by hardness (A&We)	2900	1 of 1 event (in 1999)	Inconclusive (Not attaining*)	
Harshaw Creek headwaters-Sonoita Creek AZ15050301-025 A&We, PBC, AgL	ADEQ TMDL Program Below unnamed trib (Endless Chain trib) SCHRC013.63	1999 - 1 partial suite	Copper (dissolved) µg/L	varies by hardness (A&We)	62	1 of 1		
			pH SU	6.5 - 9.0 (A&We, PBC, AgL)	4.6	1 of 1		
	ADEQ TMDL Program Below Trench Camp Mine SCHRC011.56	1998 - 3 partial suites	No exceedances					
	Summary Row A&We Not attaining PBC Not attaining AgL Not attaining	1998 - 1999 4 samples 4 sampling events	Copper (dissolved) µg/L	varies by hardness (A&We)	<15 - 62	1 of 4 samples 1 of 4 events (in 1999)	Inconclusive (Not attaining*)	ADEQ collected 4 samples at 2 sites in 1998-1999. TMDLs for copper, zinc, and low pH were approved by EPA in 2003. Assessed as "not attaining" due to copper exceedances and low pH.
			pH SU	6.5 - 9.0 (A&We, PBC, AgL)	4.6 - 7.5	1 of 4	Inconclusive (Not attaining*)	*Although current copper and pH data are inconclusive, this reach will remain "not attaining" until all uses are being attained for parameters addressed in the TMDLs. Placed on the Planning List for TMDL follow-up monitoring and missing core parameter: total lead.

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
Harshaw Creek, unnamed tributary of (Endless Chain Mine trib) headwaters-Harshaw Creek AZ15050301-888 A&We, PBC (tributary rule)	ADEQ TMDL Program Above mined area SCUHR00.56	1999 - 2 partial suites	pH SU	6.5 - 9.0 (A&We, PBC, AgL)	5.2 - 6.3	1 of 2		
	ADEQ TMDL Program Above Endless Chain Mine SCUHR000.38	1999 - 1 partial suite	pH SU	6.5 - 9.0 (A&We, PBC, AgL)	6.2	1 of 1		
	Summary Row A&We Not attaining PBC Not attaining	1999 3 samples 2 sampling events	pH SU	6.5 - 9.0 (A&We, PBC)	5.2 - 6.3	1 of 3	Inconclusive (Not attaining*)	*Loadings (pH) from this reach were addressed in the TMDL for Harshaw Creek approved by EPA in 2003. Although current pH data are inconclusive, the assessment will remain "not attaining" until data indicate that all uses are being attained for parameters addressed in the TMDL.
Humboldt Canyon headwaters - Alum Gulch AZ15050301-340 A&Ww, FBC, FC (tributary rule)	ADEQ TMDL Program Intersection with jeep road SCHMC002.41	1999 - 1 partial suite	Cadmium (dissolved) µg/L	varies by hardness (A&Ww acute)	2.8	1 of 1		
				varies by hardness (A&Ww chronic)		1 of 1		
			Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	540	1 of 1		
				varies by hardness (A&Ww chronic)		1 of 1		
			Copper (total) µg/L	500 (AgL)	554	1 of 1		
			pH SU	6.5 - 9.0 (A&Ww, PBC, AgL)	3.1	1 of 1		
	ADEQ TMDL Program Base of falls Above Humboldt well SCHMC001.27	1999 - 1 partial suite	Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	210	1 of 1		
				varies by hardness (A&Ww chronic)		1 of 1		
			Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	140	1 of 1		
				varies by hardness (A&Ww chronic)		1 of 1		
			pH SU	6.5 - 9.0 (A&We, PBC, AgL)	3.6	1 of 1		
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	85	1 of 1		
				varies by hardness (A&Ww chronic)		1 of 1		

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row	1999	Cadmium (dissolved) µg/L	varies by hardness (A&Ww acute)	2.8	2 of 2 samples 1 of 1 event (In 1999)	Inconclusive (Not attaining*)	Insufficient monitoring data to assess. Cadmium, copper, zinc and pH loadings from this tributary were addressed in the Alum Gulch TMDLs approved by EPA in 2003. *Although current data for cadmium, copper, pH and zinc are "inconclusive," assessments will remain "not attaining" until data indicate that all uses are being attained for parameters addressed in the TMDL. Placed on the Planning List for TMDL follow-up monitoring.
	A&Ww Not attaining FC Inconclusive FBC Not attaining	2 samples 1 sampling event		varies by hardness (A&Ww chronic)		2 of 2 samples 1 of 1 event	Inconclusive (Not attaining*)	
	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	140 - 540	2 of 2 samples 1 of 1 event (In 1999)	Inconclusive (Not attaining*)			
		varies by hardness (A&Ww chronic)		2 of 2 samples 1 of 1 event	Inconclusive (Not attaining*)			
	pH SU	6.5 - 9.0 (A&Ww, FBC)	3.3 - 3.6	2 of 2	Inconclusive (Not attaining*)			
	Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	85 - 210	2 of 2 samples 1 of 1 event (In 1999)	Inconclusive (Not attaining*)			
		varies by hardness (A&Ww chronic)		2 of 2 samples 1 of 1 event	Inconclusive (Not attaining*)			
Loma Verde Wash headwaters - unnamed trib to Tanque Verde Wash AZ15050302-268 A&We, PBC (tributary rule)	USGS Ambient Monitoring At Saguaro National Park SCLMV003.51 101585	2002 - 1 partial suite	No exceedances					
	USGS Ambient Monitoring At Saguaro National Park SCLMV003.50 101594	2002 - 1 partial suite	No exceedances					
	Summary Row A&We Inconclusive PBC Inconclusive	2002 2 sampling events	No exceedances					Insufficient monitoring data to assess.
Madera Canyon Creek headwaters - tributary at 31 43 42 / 110 52 50 AZ15050301-322A A&Wc, FC, FBC, AgL	ADEQ Ambient Monitoring 1 mile Below Sprung Spring SCMAD007.63 100588	2001 - 1 partial suite	No exceedances					
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	2001 1 sampling event	No exceedances					ADEQ collected 1 sample in 2002. Assessed as "Inconclusive" due to insufficient monitoring events.
Madrona Creek headwaters - Rincon Creek AZ15050302-138 A&Ww, FC, FBC (tributary rule)	USGS Ambient Monitoring Near Madrona Ranger Station SCMDN001.32 101628	2002 - 1 partial suite	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive	2002 1 sampling event	No exceedances					USGS collected samples 1 sample in 2002. Assessed as "Inconclusive" due to insufficient monitoring events.

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
Nogales and East Nogales Wash Mexico border - Potrero Creek AZ15050301-011 A&Ww, PBC	ADEQ Fixed Station Network At Morley Street tunnel SCNGW004.23 100251	1998 - 3 full + 1 partial suite 1999 - 2 full + 2 partial suites 2000 - 3 full + 1 partial suite 2001 - 4 full suites 2002 - 1 full + 3 partial suites	Ammonia mg/L	varies by hardness (A&Ww chronic)	<0.02 - 9	4 of 18		
			Chlorine (total residual) µg/L	11 (A&Ww acute)	70 - 2830	12 of 12		
				5 (A&Ww chronic)		12 of 12		
			Chromium (total) µg/L	100 (PBC)	<10 - 250	1 of 18		
			Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	<10 - 24	1 of 18		
				varies by hardness (A&Ww chronic)		2 of 18		
			Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	4.4 - 9.6 (63 - 108%)	3 of 18		
			Escherichia coli CFU/100 ml	576 (PBC)	<2 - too numerous to count	9 of 14		
			Lead (total) µg/L	15 (PBC)	<5 - 190	2 of 18		
			Turbidity (former standard) NTU	50 (A&Ww)	2 - 2730	5 of 18		
			Chlorine (total residual) µg/L	11 (A&Ww acute)	50 - 380	5 of 5		
				5 (A&Ww chronic)		5 of 5		
Summary Row A&Ww Impaired PBC Impaired	ADEQ Ambient Monitoring South of Rta. 82 overpass to E. Calle Sonora Rd. bridge (5 sites) SCNGW003.8 - SCNGW001.7	1998 - 2002 21 samples 21 sampling events	Ammonia mg/L	varies by hardness (A&Ww chronic)	<0.02 - 9	4 of 18 samples 4 of 18 events	Impaired	ADEQ collected 21 samples at 2 sites in 1998 - 2002. Assessed as "impaired" due to ammonia, chlorine, copper, and <i>Escherichia coli</i> exceedances. Placed on the Planning List due to turbidity exceedances. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.
			Chlorine (total residual) µg/L	11 (A&Ww acute)	70 - 2830	17 of 17 samples 12 of 12 events (1998-2001)	Impaired	
				5 (A&Ww chronic)		17 of 17 samples 12 of 12 events	Impaired	
			Chromium (total) µg/L	100 (PBC)	<10 - 250	1 of 18	Attaining	

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
			Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	<10 - 24	1 of 18 samples 1 of 18 events (last 3 years with no acute exceedances)	Attaining	
				varies by hardness (A&Ww chronic)		2 of 18 samples 2 of 18 events	Impaired	
			Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	4.4 - 9.6 (63 - 108%)	3 of 18	Attaining	
			<i>Escherichia coli</i> CFU/100 ml	576 (PBC)	<2 - too numerous to count	9 of 14 samples 9 of 14 events (exceedances every year)	Impaired	
			Lead (total) µg/L	15 (PBC)	<5 - 190	2 of 18	Attaining	
			Turbidity (former standard) NTU	50 (A&Ww)	2 - 2730	5 of 18	Inconclusive	
Potrero Creek Interstate19 - Santa Cruz River AZ15050301-500B A&Ww, FC, FBC, AgL	ADEQ Ambient Monitoring 0.3 miles north of Nogales Fire Station B SCPOT003.5 100705	1998 - 1 chlorine	Chlorine (total residual) µg/l	11 (A&Ww acute)	30	1 of 1		
				5 (A&Ww chronic)		1 of 1		
	ADEQ Ambient Monitoring Half mile north of Nogales suburban Fire Station B SCPOT003.38 100207	1998 - 1 partial suite	No exceedances					
	ADEQ Ambient Monitoring Bridge on Old Tucson Road SCPOT001.9 100703	1998 - 1 chlorine	Chlorine (total residual) µg/L	11 (A&Ww acute)	80	1 of 1		
				5 (A&Ww chronic)		1 of 1		
	Friends of the Santa Cruz At Ruby Road SCPOT001.53 100571	1998 - 12 partial suites 1999 - 7 partial suites 2000 - 11 partial suites 2001 - 7 partial suites	Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	0.5 - 14	3 of 31		
			Turbidity (former standard) NTU	50 (A&Ww)	2 - 200	1 of 15		
	ADEQ Ambient Monitoring Above Wastewater Treatment Plant SCPOT000.72 100208	1998 - 1 partial suite	Chlorine (total residual) µg/L	11 (A&Ww acute)	80	1 of 1		
				5 (A&Ww chronic)		1 of 1		

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	ADEQ Ambient Monitoring At Santa Cruz River SCPOT000.1 100702	1998 - 1 chlorine	Copper (dissolved) µg/L	varies by hardness (A&Ww chronic)	17	1 of 1		
			Chlorine (total residual) µg/L	11 (A&Ww acute)	800	1 of 1		
				5 (A&Ww chronic)		1 of 1		
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	1998 - 2001 47 samples 43 sampling events	Chlorine (total residual) µg/L	11 (A&Ww acute)	30 - 800	4 of 4 samples 1 of 1 event (In 1998)	Inconclusive	ADEQ and Friends of the Santa Cruz River (a volunteer monitoring group) collected 47 samples at 6 sites in 1998-2001. Assessed as "Inconclusive" and placed on the Planning List due to: 1. Chlorine exceedance, 2. Copper exceedance, 3. Missing core parameters: dissolved metals (cadmium, copper, and zinc) and total metals (mercury, lead, and copper).
				5 (A&Ww chronic)	30 - 800	4 of 4 samples 1 of 1 event	Inconclusive	
			Copper (dissolved) µg/L	varies by hardness (A&Ww chronic)	17	1 of 1 sample 1 of 2 events	Inconclusive	
			Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	0.5 - 14	3 of 33	Attaining	
			Turbidity (former standard) NTU	50 (A&Ww)	2 - 200	1 of 17	Attaining	
Redrock Canyon Creek headwaters - Harshaw Creek AZ15050301-576 A&Ww, FBC, FC	ADEQ Ambient Monitoring Near Patagonia SCRED002.17 101080	2000 - 1 full suite 2001 - 4 full suites	Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	5.2 - 10.0 (71 - 110%)	1 of 4		Low dissolved oxygen due to natural drying of the stream and not anthropogenic causes. Not considered in final assessment.
	Summary Row A&Ww Attaining FBC Attaining FC Attaining	2000 - 2001 5 samples 5 sampling events	No exceedances					ADEQ collected 5 samples in 2000-2001. Assessed as "attaining all uses."
Sabino Canyon Creek tributary at 32 23 28 / 110 47 00 - Tanque Verde Wash AZ15050302-0148 A&Ww, FC, FBC, DWS, AgL	ADEQ Ambient Monitoring Above East Fork Sabino Cyn SCSAB007.56 100635	2001 - 1 partial suite	No exceedances					Low dissolved oxygen due to low flow conditions and not anthropogenic causes. Not considered in final assessment.
	ADEQ Ambient Monitoring Near Tucson SCSAB004.39 101152	2000 - 1 full suite 2001 - 3 full suites	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	5.7 - 10.5 (72 - 97%)	1 of 4		Lab detection limits for cadmium, copper, and zinc were too high to use results for assessment.
	Summary Row A&Ww Inconclusive FC Attaining FBC Attaining DWS Attaining AgL Attaining	2000 - 2001 5 samples 4 sampling events	No exceedances					ADEQ collected 5 samples at 2 sites in 2000-2001. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: dissolved metals (cadmium, copper, zinc).
Santa Cruz River headwaters - Mexico border AZ15050301-268 A&Ww, FC, FBC, AgL, AgL	Friends of the Santa Cruz River Near Lochiel SCSCR099.03 100242	2000 - 1 full suite 2001 - 3 full suites	No exceedances					

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row A&Ww Attaining FC Attaining FBC Attaining Agl Attaining Agl Attaining	2000 - 2001 4 sampling events	No exceedances					Friends of the Santa Cruz River (a volunteer monitoring group) collected 4 samples in 2000-2001. Assessed as "attaining all uses."
Santa Cruz River Mexican border - Nogales WWTP AZ15050301-010 A&Ww, FC, FBC, DWS, Agl, AgL	ADEQ Ambient Monitoring At International Boundary SCSCR097.28 100239	1998 - 1 partial suite 1999 - 2 full suites 2000 - 4 full suites 2001 - 4 full suites	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	4.3 - 10.0 (64 - 113%)	2 of 11		
			<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	<2 - 10,000	2 of 11		
			Lead (total) µg/L	15 (DWS, FBC)	<5 - 62	1 of 11		
			Manganese (total) µg/L	980 (DWS)	<50 - 1500	1 of 11		
			Mercury (total) µg/L	0.6 (FC)	<0.5 - 0.8	1 of 11		
			Turbidity (former standard) NTU	50 (A&Ww)	0.96 - 1854	1 of 9		
	Friends of the Santa Cruz River At Guevavi Ranch SCSCR091.90 100246	1998 - 2 partial suites 1999 - 4 partial suites 2000 - 6 partial suites 2001 - 4 partial suites	Turbidity (former standard) NTU	50 (A&Ww)	2 - 200	1 of 9		
	Summary Row A&Ww Attaining FC Attaining FBC Impaired DWS Attaining Agl Attaining Agl Attaining	1998 - 2001 27 samples 16 sampling events	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	4.3 - 10.0 (64 - 113%)	2 of 20	Attaining	ADEQ and Friends of the Santa Cruz River (a volunteer monitoring group) collected 27 samples at 2 sites in 1998-2001. Assessed as "impaired" due to <i>Escherichia coli</i> exceedances.
			<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	<2 - 10,000	2 of 23 samples 2 of 20 events (occurred in 1999 and 2000)	Impaired	
			Lead (total) µg/L	15 (DWS, FBC)	<5 - 62	1 of 15	Attaining	
			Manganese (total) µg/L	980 (DWS)	<50 - 1500	1 of 15	Attaining	
			Mercury (total) µg/L	0.6 (FC)	<0.5 - 0.8	1 of 15	Attaining	
			Turbidity (former standard) NTU	50 (A&Ww)	0.25 - 200	2 of 22	Attaining	

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
Santa Cruz River Nogales WWTP - Josephine Cyn. AZ15050301-009 A&Wedw, PBC, AgL	Friends of the Santa Cruz River At Rio Rico SCSCR087.08 100238	1998 - 12 partial suites 1999 - 5 partial suites 2000 - 9 partial suites 2001 - 7 partial suites	Turbidity (former standard) NTU	50 (A&Wedw)	3 - 200	1 of 15		
	Summary Row A&Wedw Inconclusive PBC Attaining AgL Inconclusive	1998 - 2001 33 sampling events	Turbidity (former standard) NTU	50 (A&Wedw)	3 - 200	1 of 15	Attaining	Friends of the Santa Cruz River (a volunteer monitoring group) collected 33 samples in 1998-2001. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: dissolved metals (cadmium, copper, and zinc) and total metals (copper and lead).
Santa Cruz River Josephine Canyon - Tubac bridge AZ15050301-008A A&Wedw, PBC, AgL	Friends of the Santa Cruz River At Santa Gertrudis Lane SCSCR080.50 100247	1998 - 12 partial suites 1999 - 12 partial suites 2000 - 11 partial suites 2001 - 9 partial suites	Turbidity (former standard)	50 (A&Wedw)	14 - 200	8 of 20		
	ADEQ Ambient Monitoring Near Tubac SCSCR080.45 101002	2000 - 1 full suite 2001 - 1 full suite	Chlorine (total residual) µg/L	11 (A&Wedw acute)	90	1 of 1		
				5 (A&Wedw chronic)		1 of 1		
	Summary Row A&Wedw Inconclusive PBC Attaining AgL Inconclusive	1998 - 2001 46 samples 45 sampling events	Chlorine (total residual) µg/L	11 (A&Wedw acute)	90	1 of 1 event (in 2001)	Inconclusive	ADEQ and Friends of the Santa Cruz River (a volunteer monitoring group) collected 46 samples at 2 sites in 1998-2001. Assessed as "attaining some uses" and placed on the Planning List due to: 1. Chlorine exceedance. 2. Missing core parameters: dissolved metals (cadmium, copper, and zinc) and total metals (copper and lead). 3. Former turbidity standard exceedances. Monitoring will be scheduled to determine whether bottom deposit violations are occurring.
				5 (A&Wedw chronic)	90	1 of 1 event	Inconclusive	
			Turbidity (former standard) NTU	50 (A&Wedw)	14 - 200	8 of 20	Inconclusive (see comment*)	
Santa Cruz River Tubac bridge - Sopori Wash AZ15050301-008B A&We, PBC, AgL	Friends of the Santa Cruz R. North of Chavez Siding Rd. SCSCR081.34 100244	1998 - 10 partial suites 1999 - 12 partial suites 2000 - 11 partial suites 2001 - 9 partial suites	pH SU	6.5 - 9.0 (A&We, PBC, AgL)	2.6 - 8.0	1 of 34		
	Summary Row A&We Inconclusive PBC Attaining AgL Inconclusive	1998 - 2001 42 samples 42 sampling events	pH SU	6.5 - 9.0 (A&We, PBC, AgL)	2.6 - 8.0	1 of 34	Attaining	Friends of the Santa Cruz River (a volunteer monitoring group) collected 42 samples in 1998 - 2001. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: dissolved metals (cadmium, copper, and zinc) and total metals (copper and lead).

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
Santa Cruz River Roger Rd. WWTP outfall - Rillito Creek AZ15050301-003B A&Ww, PBC	Pima County Wastewater Management Department SC-01 SCSCR033.90	2001 - 3 dissolved oxygen	No exceedances					
	Pima County Wastewater Management Department SC-02 SCSCR032.49	2001 - 2 dissolved oxygen	No exceedances					
	Summary Row A&Wdw Inconclusive PBC Inconclusive	2001 5 samples 3 sampling events	No exceedances					Pima County collected 5 samples at 2 sites in 2001. Assessed as "inconclusive" and placed on the Planning List due to missing core parameters: <i>Escherichia coli</i> , pH, and dissolved metals (cadmium, copper, and zinc).
Santa Cruz River Canada del Oro - HUC boundary 15050303 AZ15050301-001 A&Wdw, PBC	Pima County Wastewater Management Department SC-03 SCSCR030.15	2001 - 3 dissolved oxygen	No exceedances					
	Pima County Wastewater Management Department SC-04 SCSCR028.64	2001 - 1 dissolved oxygen	No exceedances					
	Pima County Wastewater Management Department SC-05 SCSCR027.69	2001 - 3 dissolved oxygen	No exceedances					
	Pima County Wastewater Management Department SC-06 SCSCR026.80	2001 - 1 dissolved oxygen	No exceedances					
	ADEQ Ambient Monitoring Near Marana SCSCR025.40 101081	2001 - 4 full suites	Chlorine (total residual) µg/L	11 (A&Wdw acute)	0 - 480	1 of 2		
				5 (A&Wdw chronic)		1 of 2		
	Pima County Wastewater Management Department SC-07 SCSCR025.17	2001 - 2 dissolved oxygen	No exceedances					
	Summary Row A&Wdw Inconclusive PBC Attaining	2001 14 samples 9 sampling events	Chlorine (total residual) µg/L	11 (A&Wdw acute)	0 - 480	1 of 2 samples 1 of 2 events (in 2001)	Inconclusive	ADEQ and Pima County collected a total of 14 samples at 6 sites in 2001. Assessed as "attaining some uses" and placed on the Planning List due to chlorine exceedance.
				5 (A&Wdw chronic)	0 - 480	1 of 2 samples 1 of 2 events	Inconclusive	

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
Santa Cruz River HUC boundary 15050303 - Baumgartner Rd. AZ15050303-005A A&Wedw, PBC	Pima County Wastewater Management Department SC-08 SCSCR024.30	2001 - 3 dissolved oxygen	No exceedances					
	Pima County Wastewater Management Department SC-09 SCSCR022.19	2001 - 3 dissolved oxygen	No exceedances					
	Pima County Wastewater Management Department SC-10 SCSCR021.50	2001 - 3 dissolved oxygen	No exceedances					
	Pima County Wastewater Management Department SC-11 SCSCR019.39	2001 - 3 dissolved oxygen	No exceedances					
	Pima County Wastewater Management Department SC-12 SCSCR017.96	2001 - 3 dissolved oxygen	No exceedances					
	Summary Row A&Wedw Inconclusive PBC Inconclusive	2001 15 samples 6 sampling events	No exceedances					Pima County collected 15 samples at 5 sites in 2001. Assessed as "Inconclusive" and placed on the Planning List due to missing core parameters: <i>Escherichia coli</i> , pH, and dissolved metals (cadmium, copper, and zinc).
Sonoita Creek 750 feet below WWTP - Santa Cruz AZ15050301-013C A&Ww, FC, FBC, AgI, AgL	ADEQ Ambient Monitoring At Circle Z Ranch SCSON007.09 101154	2000 - 1 full suite 2001 - 3 full suites	Copper (dissolved) µg/L	varies by hardness (A&Ww chronic)	<10 - 34	1 of 4		
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	67 - 860	2 of 4		
				varies by hardness (A&Ww chronic)		2 of 4		
	ADEQ TMDL Program Above Temporal Gulch, Below spring at Nature Cons. SCSON015.6	1998 - 3 partial suites	Dissolved oxygen mg/l	>6.0 (90% saturation) (A&Ww)	5.2 - 7.3 (64 - 81%)	1 of 3		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in final assessment.

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row	1998 - 2001 7 sampling events	Copper (dissolved) µg/L	varies by hardness (A&Wedw chronic)	<10 - 34	1 of 4 events	Inconclusive	ADEQ collected 7 samples in 1998-2001. Assessed as "impaired" due to zinc exceedances.
	A&Ww Impaired FC Attaining FBC Attaining Agl Attaining Agl Attaining		Zinc (dissolved) µg/L	varies by hardness (A&Wedw acute)	67 - 860	2 of 4 events (in 2000-2001)	Impaired	Placed on the Planning List due to copper exceedance.
				varies by hardness (A&Wedw chronic)	67 - 860	2 of 4 events	Impaired	Reach was erroneously delisted for dissolved oxygen in 2002; however, the reach is expected to attain standards after more appropriate designated uses are assigned in rule. Reach is "not attaining" for dissolved oxygen.
Sycamore Canyon Creek headwaters - Mexico border AZ15080200-002 A&Ww, FC, FBC, AgL	ADEQ Ambient Monitoring Above Pecos Canyon RMSYC002.33 100660	2001 - 1 partial suite	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive	2001 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Three R Canyon headwaters - 31 28 35 / 110 46 19 AZ15050301-558A A&We, PBC, AgL	ADEQ TMDL Program Above 3R Mine, south branch SCTHC004.50	1999 - 1 partial suite	Copper (dissolved) µg/L	varies by hardness (A&We)	380	1 of 1		
			pH SU	6.5 - 9.0 (A&We, PBC, AgL)	3.7	1 of 1		
	ADEQ TMDL Program Above most upstream springs, below 3R mine SCTHC004.07	1999 - 1 partial suite	Copper (dissolved) µg/L	varies by hardness (A&We)	7200	1 of 1		
			Copper (total) µg/L	500 (Agl)	7700	1 of 1		
			pH SU	6.5 - 9.0 (A&We, PBC, AgL)	3.5	1 of 1		
	Summary Row A&We Not attaining PBC Not attaining Agl Not attaining	1999 2 samples 1 sampling event	Copper (dissolved) µg/L	varies by hardness (A&We)	380 - 7200	2 of 2 samples 1 of 1 event (in 1999)	Inconclusive (Not attaining)	Insufficient monitoring data to assess. TMDLs for cadmium, copper, zinc, and pH were approved by EPA in 2003.
			pH SU	6.5 - 9.0 (A&We, PBC, AgL)	3.7	2 of 2	Inconclusive (Not attaining)	*Although current pH and copper data are inconclusive, designated uses will remain "not attaining" until additional monitoring data are being attained for all parameters addressed in the TMDL.
								Placed on the Planning List for TMDL follow-up monitoring.
Three R Canyon 31 28 35 / 110 46 19 - 31 28 27 / 110 47 12 AZ15050301-558B A&Ww, FC, FBC, AgL	ADEQ TMDL Program Below most upstream springs SCTHC004.01	1998 - 3 partial suites	Cadmium (dissolved) µg/L	varies by hardness (A&Ww acute)	35 - 59	5 of 5		
		1999 - 1 partial suite 2000 - 1 partial suite		varies by hardness (A&Ww chronic)		5 of 5		

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
			Cadmium (total) µg/L	50 (AgL)	40 - 54	2 of 5		
			Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	44,000 - 71,900	5 of 5		
				varies by hardness (A&Ww chronic)		5 of 5		
			Copper (total) µg/L	1300 (FBC)	45,200 - 66,100	5 of 5		
				500 (AgL)		5 of 5		
			pH SU	6.5 - 9.0 (A&Ww, FBC, AgL)	2.9 - 3.1	4 of 4		
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	850 - 1750	5 of 5		
				varies by hardness (A&Ww chronic)		5 of 5		
	Summary Row A&Ww Not attaining FC Inconclusive FBC Not attaining AgL Not attaining	1998 - 2000 5 samples 5 sampling events	Cadmium (dissolved) µg/L	varies by hardness (A&Ww acute)	35 - 59	5 of 5 events (1998-2000)	Not attaining	ADEQ collected 5 samples in 1998-2000. TMDLs for cadmium, copper, zinc, and pH were approved by EPA in 2003. Assessed as "not attaining" due to cadmium, copper and zinc exceedances, and low pH. *Although current data for some designated uses are inconclusive, the reach will remain "not attaining" until data indicate that all uses are being attained for parameters addressed in the TMDL. Placed on the Planning List for TMDL follow-up monitoring and missing core parameters: <i>Escherichia coli</i> , total lead, total mercury, and turbidity/SSC.
				varies by hardness (A&Ww chronic)	35 - 59	5 of 5 events	Not attaining	
			Cadmium (total) µg/L	50 (AgL)	40 - 54	2 of 5	Inconclusive (Not attaining*)	
			Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	44,000 - 71,900	5 of 5 events (in 1998-2000)	Not attaining	
				varies by hardness (A&Ww chronic)	44,000 - 71,900	5 of 5 events	Not attaining	
			Copper (total) µg/L	1300 (FBC)	45,200 - 66,100	5 of 5	Inconclusive (Not attaining*)	
				500 (AgL)	45,200 - 66,100	5 of 5	Inconclusive (Not attaining*)	
			pH SU	6.5 - 9.0 (A&Ww, FBC, AgL)	2.9 - 3.1	4 of 5	Inconclusive (Not attaining*)	
			Zinc (dissolved) µg/L	varies by hardness (A&Ww acute)	850 - 1750	5 of 5 events (in 1998-2000)	Not attaining	
				varies by hardness (A&Ww chronic)	850 - 1750	5 of 5 events	Not attaining	

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
Three R Canyon 31 28 27 / 110 47 12 - Sonoita Creek AZ15050301-558C A&We, PBC, AgL	ADEQ TMDL Program Below Cox Gulch SCTHC003.03	1998 - 2 partial suites	Copper (dissolved) µg/L	varies by hardness (A&We)	12,500 - 36,200	2 of 2		
			Copper (total) µg/L	1300 (PBC)	14,800 - 34,500	2 of 2		
				500 (AgL)		2 of 2		
			pH SU	6.5 - 9.0 (A&We, PBC, AgL)	3.4 - 3.9	2 of 2		
			Zinc (dissolved) µg/L	varies by hardness (A&We)	920 - 5010	1 of 2		
	Summary Row A&We Not attaining PBC Not attaining AgL Not attaining	1998 2 samples 2 sampling events	Copper (dissolved) µg/L	varies by hardness (A&We)	12,500 - 36,200	2 of 2 events (in 1998)	Not attaining	Insufficient monitoring data to assess. TMDLs for cadmium, copper, zinc, and pH were approved by EPA in 2003.
			Copper (total) µg/L	1300 (PBC)	14,800 - 34,500	2 of 2	Inconclusive (Not attaining")	"Although current data for pH and zinc are "inconclusive," assessments will remain "not attaining" until data indicate that all uses are being attained for parameters addressed in the TMDL.
				500 (AgL)		2 of 2	Inconclusive (Not attaining")	
			pH SU	6.5 - 9.0 (A&We, PBC, AgL)	3.4 - 3.9	2 of 2	Inconclusive (Not attaining")	
			Zinc (dissolved) µg/L	varies by hardness (A&We)	920 - 5010	1 of 2 (in 1998)	Inconclusive (Not attaining")	Placed on the Planning List for TMDL follow-up monitoring.
Three R Canyon - unnamed tributary of headwaters - Three R Canyon AZ15050301-889 A&We, PBC (tributary rule)	ADEQ TMDL Program Upstream from 3R Mine, north tributary SCUTH00.30	1999 - 1 partial suite	Copper (dissolved) µg/L	varies by hardness (A&We)	1400	1 of 1		
			pH SU	6.5 - 9.0 (A&We, PBC)	3.8	1 of 1		
	Summary Row A&We Not attaining PBC Not attaining	1999 1 sampling event	Copper (dissolved) µg/L	varies by hardness (A&We)	1400	1 of 1 (in 1999)	Inconclusive (Not attaining")	Insufficient monitoring data to assess. Copper and pH loading from this reach were addressed in the Three R Canyon TMDL approved by EPA in 2003.
			pH SU	6.5 - 9.0 (A&We, PBC)	3.8	1 of 1	Inconclusive (Not attaining")	"Although current copper and pH data are "inconclusive," assessments will remain "not attaining" until data indicate that all uses are being attained for parameters addressed in the TMDL.

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
LAKE MONITORING DATA								
Arivaca Lake AZL15050304-0080 A&Ww, FC, FBC, Agl, AgL	ADEQ Lakes Program Routine Monitoring SCARI-A 100000	1998 - 3 partial suites 2000 - 1 partial suite 2001 - 3 full suites	Dissolved oxygen mg/L	>6.0 (A&Ww)	1.8 - 12.9 (25 - 150%)	1 of 7		
			pH SU	6.5 - 9.0 (A&Ww, FBC, Agl, Agl)	6.3 - 9.5	1 of 7		
			Selenium (total) µg/L	2.0 (A&Ww chronic)	<2 - 7	1 of 7		
	Summary Row A&Ww Inconclusive FC Not attaining" FBC Inconclusive Agl Inconclusive Agl Inconclusive	1998 - 2001 7 samples 7 sampling events	Dissolved oxygen mg/L	>6.0 (A&Ww)	1.8 - 12.91 (25 - 150%)	1 of 7	Inconclusive	ADEQ collected 7 samples in 1998-2001. Assessed as "not attaining" due to mercury in fish tissue. "A TMDL for mercury in fish tissue was approved by EPA in 1999. The lake will remain "not attaining" until sufficient data are collected to indicate that mercury in fish tissue is no longer a concern.
			pH SU	6.5 - 9.0 (A&Ww, FBC, Agl, Agl)	6.3 - 9.5	1 of 7	Inconclusive	Placed on the Planning List due to a fish kill in 1999. Fish kill may be evidence of a narrative standard violation.
			Selenium (total) µg/L	2.0 (A&Ww chronic)	<2 - 7	1 of 7 events	Inconclusive	Also placed on the Planning List for TMDL follow-up monitoring, low dissolved oxygen, high pH, selenium exceedances, and missing core parameters: <i>Escherichia coli</i> and dissolved metals (cadmium, copper, and zinc).
	Kennedy Lake AZL15050301-0720 A&Ww, FC, PBC	AGFD Urban Lakes Study SCKEN-A 100028	1998 - 11 field	No exceedances				
AGFD Urban Lakes Study SCKEN-B 101052		1998 - 11 field	pH	6.5 - 9.0 (A&Ww, PBC)	8.5 - 9.3	1 of 11		
AGFD Urban Lakes Study SCKEN-AB		1998 - 4 partial suites	No exceedances					
Summary Row A&Ww Inconclusive FC Attaining PBC Inconclusive		1998 26 samples 11 sampling events	pH SU	6.5 - 9.0 (A&Ww, PBC)	8.5 - 9.3	1 of 11	Attaining	AGFD collected 26 samples at 3 sites in 1998. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: <i>Escherichia coli</i> and dissolved metals (cadmium, copper, and zinc).
Lakeside Lake AZL15050302-0760 A&Ww, FC, PBC	AGFD Urban Lakes Study SCLAK-A 100034	1998 - 12 partial suites	Dissolved oxygen mg/L	>6.0 (90% saturation) (A&Ww)	2.4 - 17.1 (32 - 176%)	2 of 12		
			pH SU	6.5 - 9.0 (A&Ww, PBC)	7.3 - 9.9	2 of 12		
	Univ. of Arizona Lake Study Site A	1998 - 11 partial suites	Ammonia mg/L	varies by pH and temperature (A&Ww)	0.05 - 1.4	1 of 10		
			Dissolved oxygen mg/L	>6.0 (A&Ww)	1.6 - 19.5	3 of 10		
			pH SU	6.5 - 9.0 (A&Ww, PBC)	6.8 - 9.5	1 of 10		

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED – 2004 ASSESSMENT MONITORING DATA

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			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
			Turbidity (former standard) NTU	25 (A&Ww)	6 - 300	7 of 10		
	AGFD Urban Lakes Study and Routine Monitoring SCLAK-B 100035	1998 - 11 partial suites 2002 - 2 partial suites	Dissolved oxygen mg/L	>8.0 (A&Ww)	1.5 - 14.4 (18 - 149%)	2 of 11		
			pH SU	6.5 - 9.0 (A&Ww, PBC)	7.5 - 9.8	1 of 11		
	AGFD Urban Lakes Study SCLAK-AB 101059	1998 - 4 partial suites	No exceedances					
	Univ. of Arizona Lake Study Site H	1998 - 11 partial suites	Ammonia mg/L	varies by pH and temperature (A&Ww)	0.2 - 1.5	2 of 11		
			Dissolved oxygen mg/L	>8.0 (A&Ww)	1.0 - 17.1	5 of 11		
			Turbidity (former standard) NTU	25 (A&Ww)	0.2 - 380	7 of 11		
	Univ. of Arizona Lake Study Site I	1998 - 11 partial suites	Ammonia mg/L	varies by pH and temperature (A&Ww)	0.3 - 2.4	1 of 11		
			Dissolved oxygen mg/L	>8.0 (A&Ww)	1.0 - 19.2	4 of 11		
			pH SU	6.5 - 9.0 (A&Ww, PBC)	7.3 - 9.4	1 of 11		
			Turbidity (former standard) NTU	25 (A&Ww)	0.2 - 500	7 of 11		
	Summary Row A&Ww Impaired FC Attaining PBC Inconclusive	1998 - 2002 55 samples 25 sampling events	Ammonia mg/L	varies by pH and temperature (A&Ww chronic)	0.05 - 2.4	4 of 33 samples 2 of 11 events	Impaired	AGFD and Univ. of Arizona collected 55 samples in 1998-2002. Assessed as "Impaired" due to ammonia exceedances and low dissolved oxygen. EPA assessed this lake as impaired due to excessive nitrogen, phosphorus and chlorophyll. Also placed on the Planning List due to: 1. Missing core parameters: <i>Escherichia coli</i> and dissolved metals (cadmium, copper, and zinc). 2. Former turbidity standard exceedances. Causes and sources of turbidity will be investigated during the next monitoring cycle for this watershed.
			Dissolved oxygen mg/L	>6.0 (A&Ww)	1.0 - 19.5	16 of 55	Impaired	
			pH SU	6.5 - 9.0 (A&Ww, PBC)	6.8 - 9.9	5 of 55	Attaining	
			Turbidity (former standard) NTU	25 (A&Ww)	0.2 - 500	21 of 34	Inconclusive (see comment*)	
Parker Canyon Lake AZL15050301-1040 A&Wc, FC, FBC, Agl, AgL	ADEQ Lakes Program SCPAK-A 100057	2000 - 1 partial suite 2001 - 3 full suites	No exceedances					
	ADEQ Lakes Program SCPAK-D 100058	1998 - 2 partial suites	No exceedances					

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			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Attaining AgL Attaining	1998 - 2001 6 samples 6 sampling events	No exceedances					ADEQ collected 6 samples at 2 sites in 1998-2001. Assessed as "attaining some uses." Placed on the Planning List due to: 1. A fish consumption advisory (issued in 2002) for mercury in fish tissue, and 2. Missing core parameters: <i>Escherichia coli</i> and dissolved metals (cadmium, copper, and zinc).
Patagonia Lake AZL15050301-1050 A&Wc, FC, FBC, DWS, Agl, AgL	ADEQ Lakes Program SCPAT-A 100060	1998 - 2 partial suites 2000 - 1 partial suite 2001 - 3 partial suites	No exceedances					
	Summary Row A&Wc Inconclusive FC Attaining FBC Inconclusive DWS Attaining Agl Attaining AgL Attaining	1998 - 2001 6 samples 6 sampling events	No exceedances					ADEQ collected 6 samples in 1998-2001. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: <i>Escherichia coli</i> and turbidity.
Pena Blanca Lake AZL15050301-1070 A&Wc, FC, FBC, Agl, AgL	ADEQ Lakes Program SCPEN-A 100064	1998 - 2 partial suites 2000 - 1 partial suite 2001 - 3 partial suites	pH	6.5 - 9.0	6.1 - 8.6	1 of 6		
			SU	(A&Ww, FBC, AgL)				
			Selenium (total) µg/L	2.0 (A&Wc chronic)	<2 - 4	1 of 6		
	Summary Row A&Wc Inconclusive FC Not attaining FBC Inconclusive Agl Attaining AgL Inconclusive	1998 - 2001 6 samples 6 sampling events	Turbidity (former standard) NTU	10	2 - 13	1 of 3		
			pH	6.5 - 9.0 (A&Wc, FBC, AgL)	6.1 - 8.6	1 of 6	Inconclusive	ADEQ collected 6 samples in 1998-2001. A TMDL for mercury in fish tissue was approved by EPA in 1999. Assessed as "not attaining" until sufficient data are collected to indicate that mercury in fish tissue is no longer a concern.
			Selenium (total) µg/L	2.0 (A&Wc chronic)	<2 - 4	1 of 6 samples 1 of 6 events	Inconclusive	Placed on the Planning List for: 1. TMDL follow-up monitoring, 2. pH exceedances, 3. Selenium exceedances, and 4. Missing core parameters: <i>Escherichia coli</i> and dissolved metals (cadmium, copper, and zinc). 5. Former turbidity standard exceedances. Causes and sources of turbidity will be investigated during the next monitoring cycle for this watershed.
			Turbidity (former standard) NTU	10 (A&Wc)	2 - 13	1 of 3	Inconclusive (see comment)	

TABLE 19. SANTA CRUZ - RIO MAGDALENA - RIO SONOYTA WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCE OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD DESIGNATED USE	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
Rose Canyon Lake AZL15050302-1260 A&Wc, FC, FBC, AgL	ADEQ Lakes Program SCROS-A 100183	1998 - 1 partial suite 2000 - 1 partial suite 2001 - 3 partial suites	pH	6.5 - 9.0 (A&Wc, FBC, AgL)	6.2 - 9.8	1 of 3 high 2 of 3 low		
			Turbidity (former standard) NTU	10 (A&Wc)	4 - 30	1 of 4		
	Summary Row A&Wc Impaired FC Attaining FBC Impaired AgL Impaired	1998 - 2001 5 samples 5 sampling events	pH SU	6.5 - 9.0 (A&Wc, FBC, AgL)	6.2 - 9.8	3 of 3 (1 of 3 high, 2 of 3 low)	Impaired	ADEQ collected 5 samples in 1998-2001. EPA assessed this lake as "impaired" due to pH exceedances. Placed on the Planning List due to: 1. Missing core parameters: <i>Escherichia coli</i> and dissolved metals (cadmium, copper, and zinc). 2. Former turbidity standard exceedances. Causes and sources of turbidity will be investigated during the next monitoring cycle for this watershed.
			Turbidity (former standard) NTU	10 (A&Ww)	4 - 30	1 of 4	Inconclusive (see comment*)	

TABLE 20. SANTA CRUZ-RIO MAGDALENA-RIO SONOYTA WATERSHED -- ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
SANTA CRUZ-RIO MAGDALENA-RIO SONOYTA WATERSHED -- STREAM ASSESSMENTS				
Alum Gulch headwaters - 31 28 20 / 110 43 51 1 mile AZ15050301-561A	A&Ww Not attaining PBC Not attaining AgL Not attaining Category 4A -- Not attaining	On the Planning List due to: 1. Missing core parameter; total lead. 2. TMDL follow-up monitoring for <u>cadmium, copper, pH, and zinc</u> . (Total cadmium exceedances in 3 of 4 samples, dissolved copper exceedances in 2 of 2 sampling events, total copper exceedances in 1 of 4 samples, low pH in 4 of 4 samples, dissolved zinc exceedances in 2 of 2 sampling events, and total zinc exceedances in 3 of 4 samples.)	Delist <u>cadmium, copper, pH, and zinc</u> TMDLs for these parameters were approved by EPA in 2003. Place on the Planning List for TMDL follow-up monitoring.	
Alum Gulch 31 28 20 / 110 43 51 - 31 29 17 / 110 44 25 1 mile AZ15050301-561B	A&Ww Not attaining FC Not attaining FBC Not attaining AgL Not attaining Category 4A -- Not attaining	On the Planning List due to: 1. Missing core parameters: <i>Escherichia coli</i> , total metals (lead and mercury), and turbidity/SSC. 2. TMDL follow-up monitoring for <u>cadmium, copper, pH, and zinc</u> . (Total cadmium exceedances in 4 of 6 samples, acute and chronic cadmium exceedances in 5 of 5 sampling events, acute and chronic copper exceedances in 5 of 5 sampling events, total copper exceedances in 6 of 6 samples, low pH in 6 of 6 samples, acute and chronic zinc exceedances in 5 of 5 sampling events, and total zinc exceedances in 4 of 6 samples.)	Delist <u>cadmium, copper, pH, and zinc</u> TMDLs for these parameters were approved by EPA in 2003. Place on the Planning List for TMDL follow-up monitoring.	
Chimenea Creek headwaters - Rincon Creek 8 miles AZ15050302-140	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 -- Inconclusive	On the Planning List due to insufficient monitoring data to assess (2 samples).		
Cienega Creek headwaters - Gardner Canyon 16 miles AZ15050302-006A Unique Water	A&Ww Attaining FC Attaining FBC Inconclusive AgL Attaining Category 2 -- Attaining Some Uses	On the Planning List due to <u>missing core parameter: E. coli</u> .		
Cienega Creek Gardner Canyon - USGS gage station (Pantano Wash) 11 miles AZ15050302-006B	A&Ww Attaining FC Attaining FBC Inconclusive AgL Attaining Category 2 -- Attaining Some Uses	On the Planning List due to <u>missing core parameter: E. coli</u> .		
Cox Gulch headwaters - 3R Canyon 2 miles AZ15050301-560	A&Ww Not attaining FC Inconclusive FBC Not attaining Category 4A -- Not attaining	On the Planning List due to: 1. Missing core parameters: <i>Escherichia coli</i> , dissolved oxygen, total mercury, and turbidity/SSC. 2. TMDL follow-up monitoring for <u>cadmium, copper, pH, and zinc</u> . (Acute and chronic cadmium exceedances in 2 of 2 sampling events, acute and chronic copper exceedances in 2 of 2 sampling events, total copper exceedances in 3 of 3 samples, low pH in 1 of 1 sample, and acute and chronic zinc exceedances in 2 of 2 sampling events.)		Cadmium, copper, zinc and pH TMDLs for Three R Canyon included loadings for Cox Gulch (a tributary). These TMDLs were approved by EPA in 2003. Add to the Planning List for TMDL follow-up monitoring.
Cox Gulch, <u>unnamed tributary of</u> headwaters - Cox Gulch 1 mile AZ15050301-877	A&Ww Not attaining PBC Not attaining Category 4A -- Not attaining	On the Planning List due to: 1. Insufficient monitoring data to assess (1 sample). 2. TMDL follow-up monitoring for <u>cadmium, copper, pH, and zinc</u> . (Total and acute copper and acute zinc exceedances in 1 of 1 sampling event.)		Samples were collected on this reach in support of the Three R Canyon TMDLs. Cadmium, copper, zinc, and pH loadings from this reach were addressed in the Three R Canyon TMDLs approved by EPA in 2003. Therefore, assessed as "not attaining" and add to the Planning List for TMDL follow-up monitoring.

TABLE 20. SANTA CRUZ-RIO MAGDALENA-RIO SONOYTA WATERSHED -- ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Harshaw Creek headwaters - Sonoita Creek 14 miles AZ15050301-025	A&We Not attaining PBC Not attaining AgL Not attaining Category 4A - Not attaining	On the Planning List due to: 1. Missing core parameter: total lead. 2. TMDL follow-up monitoring for copper and pH. (Acute and chronic copper exceedance and low pH in 1 of 4 sampling events.)	Delist zinc. Designated uses were changed from A&Ww to A&We, resulting in a change in applicable standards. No exceedances of the new standard.	Copper and pH TMDLs were approved by EPA in 2003. Although copper and pH were delisted in 2002 due to requirements in the Impaired Water Identification Rule, a draft TMDL had already been completed. Place copper and pH on the Planning List for TMDL follow-up monitoring.
Harshaw Creek, unnamed tributary of (Endless Chain Mine tributary) headwaters - Harshaw Creek 2 miles AZ15050301-888	A&We Not attaining PBC Not attaining Category 4A - Not attaining	On the Planning List for TMDL follow-up monitoring for copper and pH. (Low pH in 1 of 3 samples.)		Samples were collected on this reach in support of the Harshaw Creek TMDLs. Copper and pH loadings from this tributary were addressed in the Harshaw Creek TMDLs approved by EPA in 2003. Therefore, assessed as "not attaining" and add to the Planning List for TMDL follow-up monitoring.
Humbolt Canyon headwaters - Alum Gulch 2 miles AZ15050301-340	A&Ww Not attaining FC Inconclusive FBC Not attaining Category 4A - Not attaining	On the Planning List due to: 1. Missing core parameters: <i>Escherichia coli</i> , total mercury, and turbidity/SSC. 2. TMDL follow-up monitoring for cadmium, copper, zinc and pH. (Acute and chronic cadmium, acute and chronic copper, acute and chronic zinc exceedances, and low pH in 1 of 1 sampling event.)		Samples were collected on this reach in support of the Alum Gulch TMDLs. Cadmium, copper, zinc and pH loadings from this tributary were addressed in the Alum Gulch TMDLs approved by EPA in 2003. Therefore, assessed as "not attaining" and add to the Planning List for TMDL follow-up monitoring.
Loma Verde Wash headwaters - unnamed trib to Tanque Verde Wash 4 miles AZ15050302-268	A&We Inconclusive PBC Inconclusive Category 3 - Inconclusive	On the Planning List due to insufficient monitoring data to assess (2 samples).		
Madera Canyon Creek headwaters - tributary at 31 43 42 / 110 52 50 2 miles AZ15050301-322A	A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive Category 3 - Inconclusive	On the Planning List due to insufficient monitoring data to assess (1 sample).		
Madrona Creek headwaters - Rincon Creek 7 miles AZ15050302-138	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 - Inconclusive	On the Planning List due to insufficient monitoring data to assess (1 sample).		
Nogales & East Nogales Washes Mexico border - Potrero Creek 6 miles AZ15050301-011	A&Ww Impaired PBC Impaired Category 5 - Impaired	On the Planning List due to former turbidity standard exceedances (5 of 18 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.	On the 303(d) List (since 1996) due to chlorine exceedances (12 of 12 sampling events). Add ammonia to the 303(d) List for chronic ammonia exceedances (4 of 18 sampling events). Add copper to the 303(d) List due to chronic copper exceedances (2 of 18 sampling events). Add <i>Escherichia coli</i> to the 303(d) List due to exceedances (9 of 14 sampling events). Delist fecal coliform. Standard repealed in 2002 and replaced with the <i>Escherichia coli</i> standard. Delist turbidity. The turbidity standard was repealed in 2002. Add to the Planning List due to exceedances of the former standard.	Bacterial contamination is due to insufficient wastewater infrastructure in Mexico. The chlorine tablets put in the stream to mitigate high bacterial contamination are toxic to aquatic life.

TABLE 20. SANTA CRUZ-RIO MAGDALENA-RIO SONOYTA WATERSHED -- ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Pena Blanca Canyon Creek Mexico border - Pena Blanca Lake 5 miles AZ15050301-808	A&Ww Inconclusive FBC Inconclusive FC Inconclusive Category 3 - Inconclusive	On Planning List (no current monitoring data). Added in 2002 due to insufficient monitoring data.		
Potrero Creek Interstate 19 - Santa Cruz River 5 miles AZ15050301-500B	A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive Category 3 - Inconclusive	On the Planning List due to: 1. <u>Acute and chronic chlorine</u> exceedance (1 of 1 sampling event). 2. <u>Chronic copper</u> exceedance (1 of 2 sampling events). 3. <u>Missing core parameters</u> : dissolved metals (cadmium, copper, and zinc) and total metals (mercury, lead, and copper).	<u>Delist fecal coliform</u> . Arizona replaced its fecal coliform standards with <i>Escherichia coli</i> standards. Reach is meeting the <i>Escherichia coli</i> standards.	
Redrock Canyon Creek headwaters - Harshaw Creek 13 miles AZ15050301-576	A&Ww Attaining FC Attaining FBC Attaining Category 1 - Attaining All Uses			
Sabino Canyon Creek tributary at 32 23 26 / 110 47 00 - Tanque Verde Wash 20 miles AZ15050302-014B (Reach was split into coldwater and warmwater segments since last assessment. No current data in 014A.)	A&Wc Inconclusive FC Attaining FBC Attaining DWS Attaining AgL Attaining Category 2 - Attaining Some Uses	On the Planning List due to <u>missing core parameters</u> : dissolved metals (cadmium, copper, and zinc).		
Santa Cruz River headwaters - Mexico border 14 miles AZ15050301-268	A&Ww Attaining FC Attaining FBC Attaining AgL Attaining AgL Attaining Category 1 - Attaining All Uses			
Santa Cruz River Mexico border - Nogales WWTP 17 miles AZ15050301-010	A&Ww Attaining FC Attaining FBC Impaired DWS Attaining AgL Attaining AgL Attaining Category 5 - Impaired	Remove turbidity from the Planning List. Turbidity is supporting uses (2 of 22 samples exceed).	On the 303(d) List since 2002 due to <u><i>Escherichia coli</i></u> exceedances (2 of 20 sampling events). <u>Delist fecal coliform</u> as the standard has been replaced by <i>Escherichia coli</i> standards.	
Santa Cruz River Nogales WWTP - Josephine Canyon 9 miles AZ15050301-009	A&Wedw Inconclusive PBC Attaining AgL Inconclusive Category 2 - Attaining Some Uses	On the Planning List due to <u>missing core parameters</u> : dissolved metals (cadmium, copper, and zinc) and total metals (copper and lead).	<u>Delist fecal coliform</u> as the standard has been replaced by <i>Escherichia coli</i> standards. No <i>Escherichia coli</i> exceedances occurred in 15 samples taken in 2000 - 2001.	
Santa Cruz River Josephine Canyon - Tubac Bridge 5 miles AZ15050301-008A	A&Wedw Inconclusive PBC Attaining AgL Inconclusive Category 2 - Attaining Some Uses	On the Planning List due to: 1. <u>Chlorine</u> exceedance (1 of 1 sampling event). 2. <u>Former turbidity</u> standard exceedances (8 of 20 samples). Monitoring will be scheduled to determine whether bottom deposit violations are occurring. 3. <u>Missing core parameters</u> : dissolved metals (cadmium, copper, and zinc) and total metals (copper and lead).	<u>Delist fecal coliform</u> as the standard has been replaced by <i>Escherichia coli</i> standards. No <i>Escherichia coli</i> exceedances occurred in 16 samples taken in 2000 - 2001. <u>Delist turbidity</u> . The turbidity standard was repealed in 2002. Add to the Planning List due to exceedances of the former standard.	
Santa Cruz River Tubac Bridge - Sopori Wash 9 miles AZ15050301-008B	A&We Inconclusive PBC Attaining AgL Inconclusive Category 2 - Attaining Some Uses	On the Planning List due to <u>missing core parameters</u> : dissolved metals (cadmium, copper, and zinc) and total metals (copper and lead).	<u>Delist fecal coliform</u> as the standard has been replaced by <i>Escherichia coli</i> standards. No <i>Escherichia coli</i> exceedances occurred in 17 samples taken in 2000 - 2001.	

TABLE 20. SANTA CRUZ-RIO MAGDALENA-RIO SONOYTA WATERSHED -- ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Santa Cruz River Roger Rd. WWTP outfall - Rillito Creek 3 miles AZ15050301-003B	A&Wedw Inconclusive PBC Inconclusive Category 3 - Inconclusive	On the Planning List due to <u>missing core parameters</u> : <i>Escherichia coli</i> , pH, and dissolved metals (cadmium, copper, and zinc).		
Santa Cruz River Canada del Oro - HUC boundary 15050303 9 miles AZ15050301-001	A&Wedw Inconclusive PBC Attaining Category 2 - Attaining Some Uses	On the Planning List due to <u>acute and chronic chlorine</u> exceedance (1 of 2 sampling events).		
Santa Cruz River HUC boundary 15050303 - Baumgartner Rd. 25 miles AZ15050303-005A	A&Wedw Inconclusive PBC Inconclusive Category 3 - Inconclusive	On the Planning List due to <u>missing core parameters</u> : <i>Escherichia coli</i> , pH, and dissolved metals (cadmium, copper, and zinc).		
Soncita Creek headwaters - Patagonia WWTP 14 miles AZ15050301-013A	A&We Inconclusive PBC Inconclusive AgL Inconclusive Category 3 - Inconclusive	On Planning List (no current monitoring data). Added in 2002 due to <u>missing core parameters</u> .		
Soncita Creek 750 feet below WWTP - Santa Cruz River 19 miles AZ15050301-013C	A&Ww Impaired FC Attaining FBC Attaining AgL Attaining AgL Attaining Category 5 - Impaired	On the Planning List due to <u>chronic copper</u> exceedance (1 of 4 sampling events).	Add zinc to the 303(d) List due to zinc exceedances in 2 of 4 sampling events.	Reach was erroneously delisted for dissolved oxygen in 2002; however, the reach is expected to attain standards after more appropriate designated uses are assigned in rule. Reach is "not attaining" for dissolved oxygen.
Sycamore Canyon Creek headwaters - Mexico border 10 miles AZ15080200-002	A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive Category 3 - Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Three R Canyon headwaters - 31 28 35 / 110 46 19 1 mile AZ15050301-558A (This stream has been resegmented since the last assessment)	A&We Not attaining PBC Not attaining AgL Not attaining Category 4A - Not attaining	On the Planning List due to: 1. Insufficient monitoring events to assess (only 2 sampling events). 2. TMDL follow-up monitoring for <u>cadmium, copper, zinc, and pH</u> . (Acute and chronic copper exceedance in 1 of 1 sampling event and low pH in 1 of 1 sample).	Delist <u>cadmium, copper, zinc, and pH</u> . TMDLs for these parameters were approved by EPA in 2003. Placed on the Planning List for TMDL follow-up monitoring.	
Three R Canyon 31 28 35 / 110 46 19 to 31 28 27 / 110 47 12 1 mile AZ15050301-558B (This stream has been resegmented since the last assessment)	A&Ww Not attaining FC Inconclusive FBC Not attaining AgL Not attaining Category 4A - Not attaining	On the Planning List due to: 1. <u>Missing core parameters</u> : <i>Escherichia coli</i> , total metals (lead and mercury), and turbidity/SSC. 2. TMDL follow-up monitoring for <u>cadmium, copper, zinc, and pH</u> . (Cadmium, copper, and zinc exceedances in 5 of 5 sampling events each and low pH in 5 of 5 samples.)	Delist <u>cadmium, copper, zinc, and pH</u> . TMDLs for these parameters were approved by EPA in 2003. Placed on the Planning List for TMDL follow-up monitoring.	
Three R Canyon 31 28 27 / 110 47 12 - Soncita Creek 3 miles AZ15050301-558C (This stream has been resegmented since the last assessment)	A&We Not attaining PBC Not attaining AgL Not attaining Category 4A - Not attaining	On the Planning List due to: 1. <u>Missing core parameter</u> : <i>Escherichia coli</i> , total lead, total mercury, and turbidity/SSC. 2. TMDL follow-up monitoring for <u>cadmium, copper, zinc, and pH</u> . (Copper exceedances in 2 of 2 sampling events, zinc exceedances in 1 of 2 sampling events and low pH in 2 of 2 samples.)	Delist <u>cadmium, copper, zinc, and pH</u> . TMDLs for these parameters were approved by EPA in 2003. Placed on the Planning List for TMDL follow up monitoring.	

TABLE 20. SANTA CRUZ-RIO MAGDALENA-RIO SONOYTA WATERSHED -- ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Three R Canyon, unnamed tributary of headwaters - Three R Canyon 2 miles AZL15050301-889	A&We Not attaining PBC Not attaining Category 4A - Not attaining	On the Planning List due to: 1. TMDL follow-up monitoring for <u>cadmium, copper, zinc, and pH</u> . (Copper exceedance in 1 of 1 sampling event and low pH in 1 of 1 sample.) 2. Insufficient monitoring data.		Samples were collected on this reach in support of the Three R Canyon TMDLs. Cadmium, copper, zinc, and pH loadings from this tributary were addressed in the Three R Canyon TMDLs approved by EPA in 2003. Therefore, assessed as "not attaining" and add to the Planning List for TMDL follow-up monitoring.
SANTA CRUZ-RIO MAGDALENA-RIO SONOYTA WATERSHED -- LAKE ASSESSMENTS				
Arivaca Lake 118 acres AZL15050304-0080	A&Ww Inconclusive FC Not attaining FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 4A - Not Attaining Trophic status - Hypereutrophic	On the Planning List due to: 1. Dissolved oxygen exceedance (1 of 7 samples). 2. pH exceedance (1 of 7 samples). 3. Selenium exceedance (1 of 7 sampling events). 4. Fish kill in 1999 related to algal blooms, which may be evidence of a narrative standard violation. 5. Missing core parameters: <u>Escherichia coli</u> and dissolved metals (cadmium, copper, and zinc). 6. TMDL follow-up monitoring for <u>mercury concentration in fish tissue</u> .		TMDL for mercury in fish tissue was approved by EPA in 1999. Added to the Planning List in 2002 for TMDL follow-up monitoring.
Kennedy Lake 10 acres AZL15050301-0720	A&Ww Inconclusive FC Attaining PBC Inconclusive Category 2 - Attaining Some Uses Trophic status - Eutrophic	On the Planning List due to missing core parameters: <u>Escherichia coli</u> and dissolved metals (cadmium, copper, and zinc).		
Lakeside Lake 15 acres AZL15050302-0760	A&Ww Impaired FC Attaining PBC Inconclusive Category 5 - Impaired Trophic status - Hypereutrophic	On the Planning List due to: 1. Former <u>turbidity</u> standard exceedances (21 of 34 samples). Investigation into the causes and sources of turbidity will be scheduled during the next monitoring cycle for this watershed. 2. Missing core parameters: <u>Escherichia coli</u> and dissolved metals (cadmium, copper, and zinc).	Add ammonia to the 303(d) List due to chronic ammonia exceedances (2 of 11 sampling events). Add dissolved oxygen to the 303(d) List (low dissolved oxygen in 16 of 55 samples). Nitrogen, phosphorus and chlorophyll added to the 2004 303(d) List by EPA.	City installed an aeration system in the lake in June 2002, but exceedances are still occurring. A draft nutrient TMDL, providing for dissolved oxygen and pH, was completed in 2002, but has <u>not</u> been approved by EPA.
Parker Canyon Lake 129 acres AZL15050301-1040	A&Wc Inconclusive FC Impaired FBC Inconclusive Agl Attaining Agl Attaining Category 5 - Impaired Trophic status - Mesotrophic	On the Planning List due to missing core parameters: <u>Escherichia coli</u> and dissolved metals (cadmium, copper, and zinc).	Mercury in fish tissue added to the 2004 303(d) List by EPA. A fish consumption advisory was issued in 2002.	
Patagonia Lake 230 acres AZL15050301-1050	A&Wc Inconclusive FC Attaining FBC Inconclusive DWS Attaining Agl Attaining Agl Attaining Category 2 - Attaining Some Uses Trophic status - Eutrophic	On the planning List due to missing core parameters: <u>Escherichia coli</u> and turbidity. Remove dissolved oxygen from the Planning List. <u>N₂</u> exceedances in 6 samples indicates support of designated uses.		

TABLE 20. SANTA CRUZ-RIO MAGDALENA-RIO SONOYTA WATERSHED – ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Pena Blanca Lake 51 acres AZL15050301-1070	A&Wc Inconclusive FC Not attaining FBC Inconclusive Agl Attaining Agl Inconclusive Category 4A — Not attaining Trophic status — Eutrophic	On the Planning List due to: 1. <u>Low pH</u> (1 of 6 samples). 2. <u>Chronic selenium</u> exceedance (1 of 6 sampling events). 3. Former <u>turbidity</u> standard exceedance (1 of 3 samples). Causes and sources of turbidity will be investigated during the next monitoring cycle for this watershed. 4. <u>Missing core parameters</u> : <i>Escherichia coli</i> and dissolved metals (cadmium, copper, and zinc). 5. TMDL follow-up monitoring for <u>mercury</u> concentration in fish tissue.		TMDL for mercury in fish tissue was approved by EPA in 1999. Added to the Planning List in 2002 for TMDL follow-up monitoring.
Rose Canyon Lake 7 acres AZL15050302-1260	A&Wc Impaired FC Attaining FBC Impaired Agl Impaired Category 5 — Impaired Trophic status — Eutrophic	On the Planning List due to: 1. Former <u>turbidity</u> standard exceedance (1 of 4 samples). Causes and sources of turbidity will be investigated during the next monitoring cycle for this watershed. 2. <u>Missing core parameters</u> : <i>Escherichia coli</i> and dissolved metals (cadmium, copper, zinc).	<u>pH</u> added to the 2004 303(d) List by EPA (2 of 3 exceedances).	



Bonita Creek, upstream of the Gila River, northeast of Safford, Arizona.

The Upper Gila Watershed

The Upper Gila watershed in Arizona is defined by the Gila River drainage area, from the location where the river enters from New Mexico, to Coolidge Dam (San Carlos Reservoir). Perennial flow is limited to the Gila River above Safford, the San Francisco River and its tributaries, Eagle Creek, portions of Bonita Creek, the San Carlos River, and short segments of tributaries on Mount Graham and the Chiricahua Mountains.

This 7,354 square mile watershed is occupied by only 51,500 people (2000 census), mostly living in the Safford and Clifton areas. Land ownership is approximately: 10% private land, 15% state land, 47% federal land, and 28% Tribal lands. In the Safford area, irrigated agriculture uses a high percentage of the Gila River flow. Outside of this area, land use is primarily open range grazing and recreation, with a minor amount of forestry in the national forests. A major mining facility is located in the Clifton-Morenci area along the San Francisco River. Along with the Gila Box Riparian National Conservation Area established in 1990, five wilderness areas and a wilderness study area are located in this watershed and have restricted land uses.

Elevations range from 10,028 feet (above sea level) on Mount Graham to 2,990 feet at Coolidge Dam. Except for a few sky islands (mountains located in the desert), most of the watershed is below 5,000 feet, with low desert flora and fauna and warmwater aquatic communities where perennial waters exist.

The assessment – Assessments were completed for 26 stream reaches and four lakes in this watershed. Of the 310 stream miles assessed, 70 miles were attaining all uses (four reaches) and 42 miles (4 reaches) were assessed as impaired or not attaining a use. Of the 168 lake acres assessed, none were assessed as attaining all uses and 120 acres (one lake) were assessed as impaired or not attaining a use. All others were inconclusive or attaining some uses.

A watershed assessment map follows on the next page, illustrating stream and lake assessments by category. The Upper Gila **monitoring table** (Table 21) following the map summarizes the water quality data used in the assessment. It is followed by the **assessment table** (Table 22), which bridges current assessments with past assessments and impaired water identification. Important to note in this table are comments regarding previous 303(d) lists (what has been added and removed), category designations (1 through 5), references to potential actions by EPA, and status of TMDLs.

Detailed information on how to use these tables is found at the beginning of this chapter (p. IV-1). Assessment methods and criteria can be found in Chapter III.

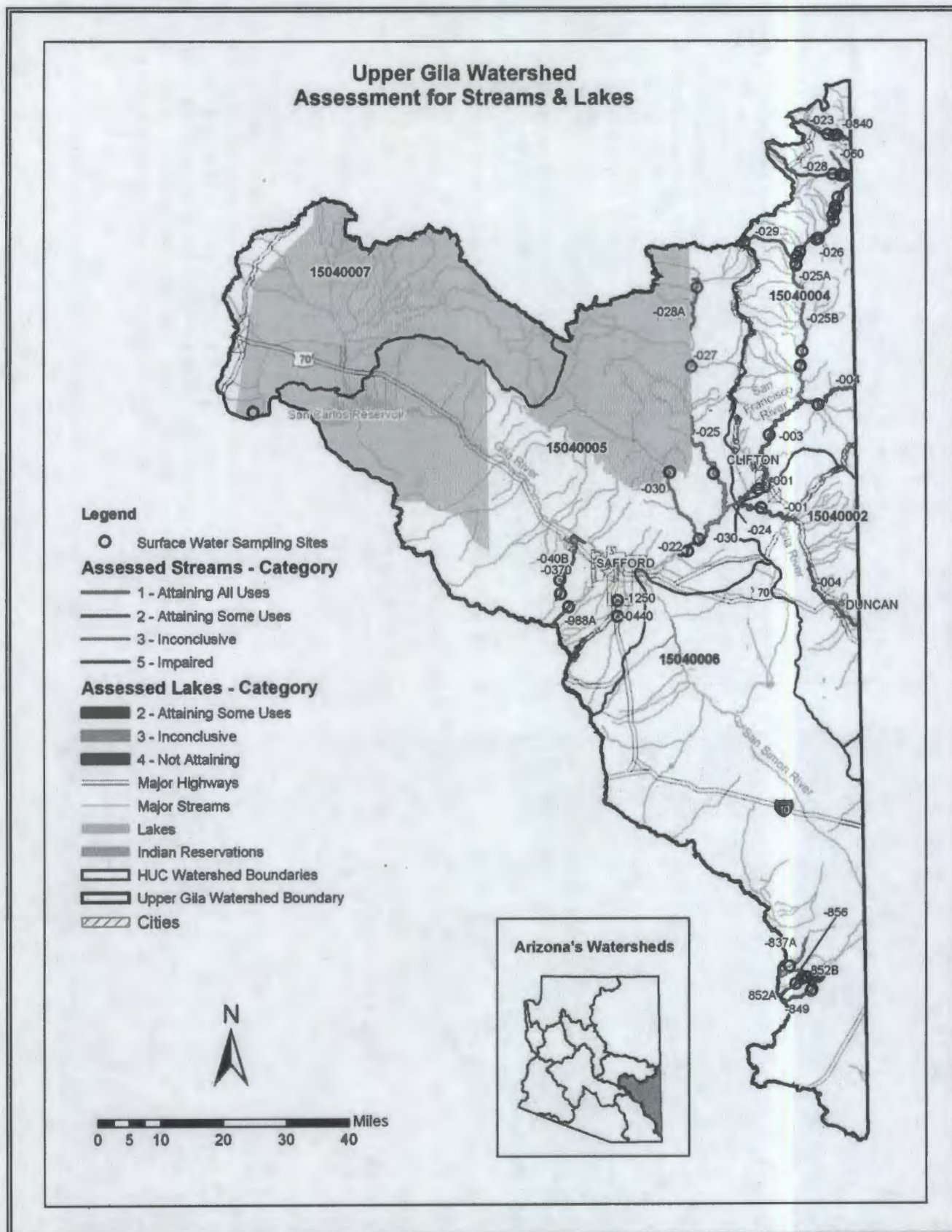


Figure 23. Watershed monitoring and assessments

TABLE 21. UPPER GILA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEARS SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS (MEAN)	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
STREAM MONITORING DATA								
Ash Creek Unnamed tributary at 32 45 37 / 109 52 22 - Gila River AZ15040005-040B A&Ww, FC, FBC, AgL	ADEQ Ambient Monitoring At Forest Road #307 UGA1H008.62 100830	1999 - 1 full suite 2000 - 2 partial suites 2002 - 2 full suites	No exceedances					Lab reporting limits for the dissolved metals (cadmium, copper, and zinc) were too high to use results for assessment.
	Summary Row A&Ww Inconclusive FC Attaining FBC Attaining AgL Attaining	1999 - 2002 5 sampling events	No exceedances					ADEQ collected 5 samples in 1999 - 2002. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: dissolved metals (cadmium, copper, and zinc).
Blue River New Mexico border - KP Creek AZ15040004-026 A&Wc, FC, FBC, AgL, AgL	ADEQ TMDL Program Bobcat Flat (Site 5) UGBLR043.03 101184	2001 - 4 field	No exceedances					
	ADEQ TMDL Program Lazy YJ Ranch (Site 6) UGBLR042.69 101185	2001 - 4 field	Turbidity NTU	10 (A&Wc)	<1 - 13	1 of 4		
	ADEQ TMDL Program Below Nolan Creek (Site 7) UGBLR041.93 101186	2001 - 4 field	No exceedances					
	ADEQ TMDL Program Above Blue Crossing (Site 8) UGBLR039.84 101187	2001 - 4 field	No exceedances					
	ADEQ TMDL Program Below Blue Crossing (Site 9) UGBLR039.67 101188	2001 - 4 field	No exceedances					
	ADEQ TMDL Program Above Balke Crossing (Site 10) UGBLR035.10 101189	2001 - 4 field	No exceedances					
	ADEQ TMDL Program Below Balke Crossing (Site 11) UGBLR034.75 101190	2001 - 4 field	No exceedances					
	ADEQ Biocriteria & Ambient Monitoring Below Jackson Box (upper) UGBLR033.04 100419	1999 - 1 partial suite 2000 - 3 partial suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.0 - 7.2 (84 - 96%)	2 of 4		
	ADEQ TMDL Program Above Box (Site 12) UGBLR030.42 101191	2001 - 4 field	No exceedances					

TABLE 21. UPPER GILA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEARS SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS (MEAN)	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
	ADEQ TMDL Program Below Box (Site 13) UGBLR029.50 101192	2001 - 4 field	No exceedances					
	Summary Row	1999-2001	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.0 - 7.5 (84 - 102%)	2 of 22	Attaining	ADEQ collected 40 samples in 1999-2001, primarily in support of a turbidity investigation. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: total boron, dissolved metals (copper, cadmium, and zinc), and total metals (mercury, manganese, copper, and lead).
	A&Wc Inconclusive FC Inconclusive FBC Attaining Agl Inconclusive AgL Inconclusive	40 samples 8 sampling events	Turbidity (former standard) NTU	10 (A&Wc)	<1 - 13	1 of 40	Attaining	
Blue River KP Creek - Strayhorse Creek AZ15040004-025A A&Wc, FC, FBC, Agl, AgL	ADEQ Ambient Monitoring Below KP Creek UGBLR021.95 100835	1999 - 1 partial suite 2000 - 3 partial suites	No exceedances					
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Attaining Agl Inconclusive AgL Inconclusive	1999 - 2000 4 sampling events	No exceedances					ADEQ collected 4 samples in 1999 - 2000. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: total boron, dissolved metals (copper, cadmium, and zinc), and total metals (mercury, manganese, copper, and lead).
Blue River Strayhorse Creek - San Francisco River AZ15040004-025B A&Ww, FC, FBC, Agl, AgL	ADEQ TMDL Program Above Fritz Ranch UGBLR008.07 100420	2001 - 3 field	No exceedances					
	ADEQ Fixed Station At Juan Miller Road UGBLR005.68 100398	1998 - 1 full suites 1999 - 5 full suites 2000 - 4 full suites 2000 - 4 full suites 2001 - 4 full suites	No exceedances					
	ADEQ TMDL Program Near Clifton UGBLR005.59 100770	2001 - 4 field	No exceedances					
	Summary Row A&Ww Attaining FC Attaining FBC Attaining Agl Attaining AgL Attaining	1998-2002 25 samples 20 sampling events	No exceedances					ADEQ collected 25 samples at 3 sites from 1998-2002. Assessed as "attaining all uses."
Bonita Creek Park Creek - Gila River AZ15040005-030 A&Ww, FC, FBC, DWS, AgL Unique Water	ADEQ Ambient Monitoring Below Indian Reservation boundary UGBON011.31 100188	1999 - 1 full suite 2000 - 1 full + 2 partial suites	No exceedances					

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STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEARS SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS (MEAN)	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	
	ADEQ Ambient Monitoring Above Gila River UGBON000.20 100185	1999 - 1 partial suite 2000 - 1 full + 3 partial suites 2001 - 1 full + 1 partial suite 2002 - 1 full suite	Turbidity (former standard) NTU	15 (Unique Water) (A&Ww)	<1 - 49	1 of 8		
	Summary Row A&Ww Attaining FC Attaining FBC Attaining DWS Attaining AgL Attaining	1998-2002 12 samples 11 sampling events	Turbidity (former standard) NTU	15 (Unique Water) (A&Ww)	<1 - 49	1 of 11	Attaining	ADEQ collected 12 samples at 2 sites in 1998-2002. Assessed as "attaining all uses."
Campbell Blue Creek headwaters - Blue River AZ15040004-028 A&Wc, FC, FBC, AgL	ADEQ TMDL Program Above Turkey Creek (site 2) UGCMB002.30 101181	2001 - 4 field	No exceedances					Lab reporting limits for some dissolved copper samples were too high to use results for assessment.
	ADEQ Ambient Monitoring Above K E Canyon UGCMB002.16 100522	1999 - 1 full suite 2000 - 2 full + 1 partial suites	No exceedances					
	ADEQ TMDL Program Below Turkey Creek (site 3) UGCMB001.46 101182	2001 - 4 field	No exceedances					
	ADEQ TMDL Program Above Dry Blue (site 4) UGCMB000.16 101183	2001 - 4 field	No exceedances					
	Summary Row A&Wc Inconclusive FC Attaining FBC Attaining AgL Attaining	1999-2001 16 samples 8 sampling events	No exceedances					ADEQ collected 16 samples at 4 sites from 1999-2001. Assessed as "attaining some uses" and added to the Planning List due to missing core parameter: dissolved copper.
Cave Creek headwaters - South Fork of Cave Creek AZ15040006-852A A&Wc, FC, FBC, AgL, AgL Unique Water	ADEQ Unique Waters Program Above Herb Martyr Campground UGCAV009.86 101108	1998 - 2 partial suites 1999 - 1 partial suite 2001 - 1 full suite 2002 - 1 full suite	No exceedances					
	ADEQ Unique Waters Program Above summer homes along FS Road 42A UGCAV008.92 101107	1998 - 1 partial suite 1999 - 1 partial suite	Dissolved oxygen mg/L	> 7.1 (90% saturation) (A&Wc)	6.4 - 8.1 (81 - 92%)	1 of 2		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in the final assessment.
	ADEQ Unique Waters Program Above SW Research Station UGCAV008.49 101106	1998 - 2 partial suites	No exceedances					

TABLE 21. UPPER GILA WATERSHED – 2004 ASSESSMENT MONITORING DATA

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			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS (MEAN)	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	
	ADEQ Unique Waters Program Above South Fork of Cave Creek UGCAV007.70 101105	1998 - 2 partial suites	No exceedances					
	ADEQ Unique Waters Program Below North Fork Cave Creek UGCAV007.64 100933	1998 - 1 partial suite 1999 - 1 full + 1 partial suite 2000 - 3 full + 1 partial suite 2001 - 1 full + 1 partial suite 2002 - 1 full suite	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.2 - 9.3 (78 - 107%)	1 of 10		Stream is dominated by thermal spring at low flows (and high total dissolved solids). Dissolved oxygen is naturally below surface water standards in such spring recharge areas. Therefore, low dissolved oxygen not included in final assessment. Lab reporting limits for 8 other selenium samples were too high to use results for assessment.
			Selenium (total) µg/L	2 (A&Wc chronic)	<5 - 8.8	2 of 2		
			Turbidity (former standard) NTU	10 (A&Wc)	<1-15	1 of 10		
	Summary Row A&Wc Impaired FC Attaining FBC Attaining Agl Attaining AgL Attaining	1998-2002 21 samples 10 sampling events	Selenium (total) µg/L	2 (A&Wc chronic)	<5 - 8.8	2 of 2 events	Impaired	ADEQ collected 21 samples at 5 sites in 1998-2002. Assessed as "Impaired" due to selenium exceedances.
			Turbidity (former standard) NTU	10 (A&Wc)	<1 - 15	1 of 18	Attaining	
Cave Creek South Fork of Cave Creek - USFS boundary AZ15040006-852B A&Ww, FC, FBC, Agl, AgL Unique Water	ADEQ Unique Waters Program Below South Fork of Cave Creek UGCAV007.46 101104	1998 - 2 partial suites	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	257	1 of 1		Exceedance occurred during very high flow (normally <1 cfs, flow at 65 cfs).
	ADEQ Unique Waters Program Below Coronado Ranger Station UGCAV006.55 100937	1998 - 2 partial suites 1999 - 1 full suite 2000 - 1 full + 2 partial suites 2001 - 2 full suites	Turbidity (former standard) NTU	50 (A&Ww)	<1-64	1 of 8		Exceedance occurred during very high flow (normally <1 cfs, flow at 65 cfs).
	Summary Row A&Ww Inconclusive FC Attaining FBC Attaining Agl Attaining AgL Attaining	1998-2001 10 samples 8 sampling events	<i>Escherichia coli</i> CFU / 100 ml	235 (FBC)	257	1 of 8 events (None in the last 3 years of sampling)	Attaining	ADEQ collected 10 samples at 2 sites in 1998-2001. Assessed as "attaining some uses" and placed on the Planning List due to exceedance of the former turbidity standard. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.
			Turbidity (former standard) NTU	50 (A&Ww)	<1 - 64	1 of 9	Inconclusive (see comment)	
Cave Creek, North Fork headwaters - Cave Creek AZ15040006-856 A&Wc, FC, FBC (tributary rule)	ADEQ Unique Waters Program Above Cave Creek UGNCV000.03 101129	1999 - 1 partial suite	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	5.3 (73%)	1 of 1		Low dissolved oxygen due to naturally occurring ground water upwelling at thermal spring, and not anthropogenic causes. Not included in the final assessment.
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive	1999 1 sampling event	No exceedances					Insufficient monitoring data to assess.

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STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEARS SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS (MEAN)	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	
Cave Creek, <u>South Fork</u> headwaters - Cave Creek AZ15040006-849 A&Wc, FC, FBC, Agl, AgL Unique Water	ADEQ Biocriteria Program Above South Fork Campground UGSCV002.45 100640	1998 - 1 partial suite	No exceedances					
	ADEQ Ambient Monitoring Above South Fork Campground UGSCV002.26 100639	1998 - 1 full + 1 partial suite 1999 - 2 full suites 2000 - 2 full + 2 partial suites 2001 - 2 full suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	3.6 - 8.8 (40 - 98%)	5 of 10		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in the final assessment.
			<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	<2 - 240	1 of 9		Exceedances coincided with very high flow (normally < 1 cfs, flow at 22 cfs). Pristine watershed.
			Turbidity (former standard) NTU	10 (A&Wc)	<1 - 36	1 of 10		
	ADEQ Unique Waters Program Above confluence with Cave Creek UGSCV000.12 101109	1998 - 1 full + 1 partial suite	No exceedances					
	Summary Row A&Wc Attaining FC Attaining FBC Inconclusive Agl Attaining Agl Attaining	1998 - 2001 13 samples 10 sampling events	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	<2 - 240	1 of 10 events (in 2000)	Inconclusive	ADEQ collected 13 samples at 3 sites in 1998 - 2001. Assessed as "attaining some uses" and placed on the Planning List due to <i>Escherichia coli</i> exceedance.
Eagle Creek headwaters - unnamed tributary at 33 23 24 / 109 29 35 AZ15040005-028A A&Wc, FC, FBC, DWS, Agl, AgL	ADEQ Ambient Monitoring Above Honeymoon Campground UGEAG035.99 100535	1999 - 1 full suite 2000 - 1 full + 2 partial suites	No exceedances					
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Attaining DWS Inconclusive Agl Inconclusive Agl Inconclusive	1999-2000 4 sampling events	No exceedances					ADEQ collected 4 samples in 1999-2000. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: total boron, dissolved metals (copper, cadmium, and zinc), and total metals (mercury, arsenic, chromium, lead, manganese, and copper).
Eagle Creek Willow Creek - Sheep Wash AZ15040005-027 A&Ww, FC, FBC, DWS, Agl, AgL	ADEQ Ambient Monitoring Above Sheep Wash Crossing UGEAG023.34 100536	1999 - 1 full suite 2000 - 1 full + 2 partial suites 2002 - 1 full suite	No exceedances					
	Summary Row A&Ww Attaining FC Attaining FBC Attaining DWS Attaining Agl Attaining Agl Attaining	1999 - 2002 5 sampling events	No exceedances					ADEQ collected 5 samples in 1999-2002. Assessed as "attaining all uses."

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STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEARS SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS (MEAN)	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
Eagle Creek Sheep Wash - Gila River AZ15040005-025 A&Ww, FC, FBC, DWS, Agl, AgL	ADEQ Ambient Monitoring Below Gold Gulch @ Morenci UGEAG006.05 100806	1999 - 1 full suite 2000 - 1 full + 2 partial suites 2002 - 1 full suite	No exceedances					
	Summary Row A&Ww Attaining FC Attaining FBC Attaining DWS Attaining Agl Attaining AgL Attaining	1999 - 2002 5 sampling events	No exceedances					ADEQ collected 5 samples in 1999-2002. Assessed as "attaining all uses."
East Turkey Creek headwaters - tributary at 31 58 22 / 109 12 17 AZ15040006-837A A&Wc, FC, FBC, AgL	ADEQ Biocriteria Program Above Forest Road 42 UGETK007.70 100545	1998 - 1 partial suite	No exceedances					
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive AgL Inconclusive	1998 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Frye Canyon Creek headwaters - Frye Mesa Reservoir AZ15040005-988A A&Wc, FC, FBC, DWS, AgL	ADEQ Ambient Monitoring First crossing of Trail #36 UGFRY007.00 100720	1999 - 1 full suite 2000 - 2 partial suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.74 - 7.76 (78-88%)	1 of 3		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in the final assessment.
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Attaining DWS Inconclusive Agl Inconclusive AgL Inconclusive	1999 - 2000 3 sampling events	No exceedances					ADEQ collected 3 samples in 1999-2000. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: dissolved metals (copper, cadmium, and zinc) and total metals (mercury, arsenic, chromium, lead, and copper).
Gila River NM border - Bitter Creek AZ15040002-004 A&Ww, FC, FBC, Agl, AgL	ADEQ Ambient Monitoring Duncan at New Mexico border UGGLR205.35 100808	1999 - 1 full suite 2000 - 1 full suite 2002 - 2 full suites	Selenium (total) µg/L	2 (A&Ww chronic)	<5 - 5.8	1 of 1		Lab reporting limits for 4 additional samples were too high to use results for assessment.
	Summary Row A&Ww Inconclusive FC Attaining FBC Attaining Agl Attaining AgL Attaining	1998 - 2002 4 sampling events	Selenium (total) µg/L	2 (A&Ww chronic)	<5 - 5.8	1 of 1 event	Inconclusive	ADEQ collected 4 samples in 1998 - 2002. Assessed as "attaining some uses" and placed on the Planning List due to selenium exceedance.
Gila River Stutly Creek - San Francisco River AZ15040002-001 A&Ww, FC, FBC, Agl, AgL	ADEQ Ambient Monitoring Above Old Safford Bridge UGGLR197.26 100809	1999 - 1 full suite 2000 - 1 full + 2 partial suites 2001 - 1 full suite 2002 - 5 full suites	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	5.6 - 10.1 (81-130%)	1 of 9		Exceedance occurred during higher flow event.
			Lead (total) µg/L	15 (FBC)	<5 - 110	1 of 8		Exceedance occurred during higher flow event.
			Selenium (total) µg/L	2 (A&Ww chronic)	<5 - 7	3 of 3		Reporting limits of 7 other selenium samples were too high to use results for assessment.

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			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS (MEAN)	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	
	Summary Row A&Ww Impaired FC Attaining FBC Inconclusive AgI Attaining AgL Attaining	1999 - 2002 10 sampling events	Turbidity (former standard) NTU	50 (A&Ww)	3 - > 999	2 of 10		Both exceedances coincide with higher flow events. (Note that 4 SSC samples in 2002 did not exceed standards.)
			Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	5.61 - 10.1 (81-130%)	1 of 9	Inconclusive	ADEQ collected 10 samples 1998-2002. Assessed as "impaired" due to chronic selenium exceedances.
			Lead (total) µg/L	15 (FBC)	<5 - 110	1 of 8	Inconclusive	Placed on the Planning List due to lead exceedance and low dissolved oxygen.
			Selenium (total) µg/L	2 (A&Ww chronic)	<5 - 7	3 of 3 events	Impaired	
			Turbidity (former standard) NTU	50 (A&Ww)	3 - > 999	2 of 10	Attaining	
Gila River Elonita Creek - Yuma Wash AZ15040005-022 A&Ww, FC, FBC, AgI, AgL	USGS Fixed Station #09448500 Solomon above Safford Valley UGGLR188.98 100729	1998 - 6 full suites 1999 - 6 full suites 2000 - 4 full suites 2001 - 4 full suites 2002 - 4 full suites	Copper (dissolved) µg/L	varies by hardness (A&Ww chronic)	<2 - 9	1 of 23		Exceedance occurred during higher flow event.
			<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	<1 - 2300	3 of 23		
			Lead (total) µg/L	15 (FBC)	1 - 94	4 of 21		All exceedances coincide with higher flow events.
			Suspended sediment concentration (SSC) mg/L	80 (geometric mean) (A&Ww)	8 - 6410	Geo. means: 1998 = 174 1999 = 31 2001 = 46		Maximum base flow was calculated to be 729 cfs based on 30 years of flow data. Insufficient SSC data to calculate a geometric mean in 2000 or 2002.
			Turbidity (former standard) NTU	50 (A&Ww)	<1-10,000	7 of 24		Four of the exceedances coincide with higher flow events.
	Summary Row A&Ww Impaired FC Attaining FBC Impaired AgI Attaining AgL Attaining	1998-2002 24 sampling events	Copper (dissolved) µg/L	varies by hardness (A&Ww chronic)	<2 - 9	1 of 23 events	Inconclusive	USGS collected 24 samples in 1998 - 2002. Assessed as "impaired" due to <i>Escherichia coli</i> exceedances. EPA assessed this reach as also impaired due to sediment, using exceedances of the former turbidity standard as evidence of a narrative bottom deposit violation.
			<i>Escherichia coli</i> CFU	235 (FBC)	<1 - 2300	3 of 23 events (in 1998 and 2001)	Impaired	
			Lead (total) µg/L	15 (FBC)	1 - 94	4 of 21	Inconclusive	Also placed on the Planning list due to: 1. Copper exceedances, 2. Lead exceedances, 3. SSC geometric mean exceedance, 4. Former turbidity standard exceedances. Monitoring will be scheduled to determine whether bottom deposit violations are occurring.
			Suspended sediment conc. (SSC) mg/L	80 (geometric mean) (A&Ww)	8 - 6410	1 of 3 annual geo. means	Inconclusive	
			Turbidity (former standard) NTU	50 (A&Ww)	1 - 10,000	7 of 24	Impaired	
K P Creek headwaters - Blue River AZ15040004-029 A&Ww, FC, FBC, AgL	ADEQ Ambient Monitoring Below K P Cienega UG0KP065.54 100888	1999 - 1 partial suite	No exceedances					(Sampled on same date as other site).

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			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS (MEAN)	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	
	ADEQ Ambient Monitoring @ Blue River UGOKP000.08 100889	1999 - 1 partial suite 2000 - 3 partial suites 2002 - 1 full suite	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.2 - 8.9 (65 - 94%)	2 of 5		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in the final assessment.
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Attaining AgL Inconclusive	1999 - 2002 6 samples 5 sampling events	No exceedances					ADEQ collected 6 samples at 2 sites in 1999-2002. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: dissolved metals (copper, cadmium, and zinc) and total metals (mercury, lead, and copper).
San Francisco River headwaters - New Mexico border AZ15040004-023 A&Wc, FC, FBC, AgL, AgL	ADEQ Fixed Station Above Luna Lake UGSFR059.98 100381	1999 - 3 full suites 2000 - 2 full suites 2001 - 3 full suites 2002 - 2 full suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	5.6 - 9.5 (72 - 100%)	1 of 10		
			Turbidity (former standard) NTU	10 (A&Wc)	6 - 26	6 of 9		Two exceedances coincide with spring runoff flows.
	Summary Row A&Wc Impaired FC Attaining FBC Attaining AgL Attaining AgL Attaining	1999 - 2002 10 sampling events	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	5.6 - 9.5 (72 - 100%)	1 of 10	Attaining	ADEQ collected 10 samples in 1999-2002. EPA assessed this reach as Impaired due to sediment, using exceedances of the former turbidity standard as evidence of a narrative bottom deposit violation.
			Turbidity (former standard) NTU	10 (A&Wc)	6 - 26	6 of 9	Impaired	
San Francisco River New Mexico border - Blue River AZ15040004-004 A&Ww, FC, FBC, AgL, AgL	ADEQ Ambient Monitoring Near Martinez Ranch UGSFR017.66 100834	1999 - 1 partial suite 2000 - 1 full + 2 partial suites 2002 - 2 full suites	Turbidity (former standard) NTU	50 (A&Ww)	7 - 74	1 of 6		
	Summary Row A&Ww Inconclusive FC Attaining FBC Attaining AgL Attaining AgL Attaining	1999 - 2002 6 sampling events	Turbidity (former standard) NTU	50 (A&Ww)	7 - 74	1 of 6	Inconclusive (see comment)	ADEQ collected 6 samples in 1999 - 2002. Assessed as "attaining some uses" and placed on the Planning List due to exceedance of the former turbidity standard. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.
San Francisco River Blue River - Limestone Gulch AZ15040004-003 A&Ww, FC, FBC, AgL, AgL	ADEQ Fixed Station 6 miles above Clifton (below mining) UGSFR011.29 100708	1999 - 2 full + 2 partial suites 2000 - 3 full + 1 partial suite 2001 - 4 full suites 2002 - 5 full suites	Escherichia coli CFU/100 ml	235 (FBC)	<2 - 500	1 of 13		Exceedance occurred during summer monsoon event.
			Mercury µg/L	0.6 (FC)	<0.5 - 0.75	1 of 17		Note that the exceedance occurred in one of two split samples. The other split result was less than the lab reporting limit.
			Turbidity (former standard) NTU	50 (A&Ww)	1 - >999	3 of 16		Exceedances occurred during summer monsoon event.

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			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS (MEAN)	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	
	Summary Row	1999-2002	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	<2 - 500	1 of 13 events (In 2002)	Inconclusive	ADEQ collected 17 samples in 1999-2002. Assessed as "attaining some uses" and placed on the Planning List due to <i>Escherichia coli</i> exceedance.
	A&Ww	Attaining	Mercury µg/L	0.8 (FC)	<0.5 - 0.75	1 of 17	Attaining	
	FC	Attaining	Turbidity (former standard) NTU	50 (A&Ww)	1 - > 999	3 of 16	Attaining	
	FBC	Inconclusive						
San Francisco River Limestone Gulch - Gila River AZ15040004-001 A&Ww, FC, FBC, Agl, AgL	ADEQ Fixed Station Below Clifton (below mining) UGSFR003.04 100382	1998 - 3 full + 1 partial suites 1999 - 3 full + 2 partial suites 2000 - 3 full + 1 partial suites 2001 - 4 full suites 2002 - 4 full + 1 partial suites	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	<10 - 170	1 of 22		
				varies by hardness (A&Ww chronic)	<10 - 170	1 of 22		
			Dissolved oxygen mg/L	> 8.0 (90% saturation) (A&Ww)	5.2 - 10.3 (82 - 113%)	2 of 21		
			<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	<2 - 545	1 of 17		Exceedance occurred during summer monsoon event.
			Lead (total) µg/L	15 (FBC)	<5 - 35	1 of 22		Exceedance occurred during summer monsoon event.
			Turbidity (former standard) NTU	50 (A&Ww)	<1 - > 999	4 of 21		Two samples were related to high flow events.
	Summary Row	1998 - 2002	Copper (dissolved) µg/L	varies by hardness (A&Ww acute)	<10 - 170	1 of 22 events (In 2000)	Inconclusive	ADEQ collected 22 samples in 1998 - 2002. Assessed as "attaining some uses" and placed on the Planning list due to: 1. Copper exceedances, 2. <i>Escherichia coli</i> exceedances, 3. Former turbidity standard exceedances (reach was on the 2002 303(d) List due to turbidity). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.
	A&Ww	Inconclusive		varies by hardness (A&Ww chronic)	<10 - 170	1 of 22	Inconclusive	
	FC	Attaining	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	5.2 - 10.3 (82 - 113%)	2 of 21	Attaining	
	FBC	Inconclusive	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	<2 - 545	1 of 17 events (In 2002)	Inconclusive	
	Agl	Attaining	Lead (total) µg/L	15 (FBC)	<5 - 35	1 of 22	Attaining	
	AgL	Attaining	Turbidity (former standard) NTU	50 (A&Ww)	1 - > 999	4 of 21	Inconclusive	
Turkey Creek headwaters - Campbell Blue Creek AZ15040004-060 A&Ww, FC, FBC, AgL	ADEQ TMDL Program Above Campbell Blue (Site 1) UGTRY000.17 101180	2001 - 4 field	No exceedances					

TABLE 21. UPPER GILA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEARS SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS (MEAN)	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	2001 4 sampling events	No exceedances					ADEQ collected four field samples in 2001. Assessed as "Inconclusive" and placed on the Planning List due to missing core parameters: <i>Escherichia coli</i> , dissolved metals (cadmium, copper, and zinc), and total metals (mercury, copper, and lead).
LAKES MONITORING DATA								
Cluff Pond #3 AZL15040005-0370 A&Ww, FC, FBC, AgL, AgL	AGFD Routine Monitoring UGCRC - MID (mid lake)	2001 - 1 partial suite	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	2001 1 sampling event						Insufficient monitoring data to assess.
Dankworth Ponds AZL15040006-0440 A&Wc, FC, FBC	ADEQ Lakes Program UGDAN-A 100018	1999 - 1 partial suite 2000 - 3 partial suites	Dissolved oxygen mg/L	7.0 (90% saturation) (A&Wc)	4.4 - 8.1 (50 - 102%)	1 of 4		Low dissolved oxygen due to naturally occurring ground water upwelling, and not anthropogenic causes. Not included in the final assessment. Lab reporting limits for 3 other selenium samples were too high to use results for chronic standards assessment but sufficient for acute standards. Note that duplicate selenium sample did not exceed standards
			Selenium µg/L	2 (A&Wc chronic)	<5 - 25	1 of 1		
				20 (A&Wc acute)		1 of 4		
	ADEQ Lakes Program UGDAN-B 100987	1999 - 1 field	Turbidity (former standard) NTU	10 (A&Wc)	1 - 27	1 of 2		
			Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	4.4 (50%)	1 of 1		
			Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	3.5 - 3.95 (51 - 59%)	4 of 4		
	ADEQ Lakes Program UGDAN-Springs 2, 3, 4 100990, 100991, 100992	1999 - 1 partial suite (at 3 springs)	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	0.2 - 2.6 (2 - 42%)	3 of 3		
			Summary Row A&Wc Inconclusive FC Attaining FBC Inconclusive	2 (A&Wc chronic)	<5 - 25	1 of 1 event	Inconclusive	
				20 (A&Wc acute)		1 of 4 events (in 2000)	Inconclusive	
Luna Lake AZL15040004-0840 A&Wc, FC, FBC, AgL	AGFD Routine Monitoring UGLUN - A (dam site)	1998 - 3 partial suites	Turbidity (former standard) NTU	10 (A&Wc)	1 - 27	1 of 2	Inconclusive (see comment*)	ADEQ collected 12 samples at 4 sites in 1999-2000. Assessed as "attaining some uses" and placed on the Planning List due to: 1. Selenium exceedances, 2. Missing core parameters: <i>Escherichia coli</i> and dissolved metals (copper, cadmium, and zinc), 3. Former turbidity standard exceedance. Investigation into the causes and sources of turbidity will be scheduled during the next monitoring cycle for this watershed.
			Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.5 - 8.0 (87 - 99%)	1 of 3		
			pH SU	6.5 - 9.0 (A&Wc, FBC, AgL)	8.4 - 9.9	2 of 3		

TABLE 21. UPPER GILA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEARS SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS (MEAN)	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	
	Alpine/Luna Lake Watershed Group 319 Project UGLUN-L1 (wildlife restricted area)	2001 - 4 field 2002 - 8 field	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	2 - 13.4 (22-152%)	5 of 9		
			pH SU	6.5 - 9.0 (A&Wc, FBC, AgL)	8.4 - 9.5	5 of 12		
	Alpine/Luna Lake Watershed Group 319 Project UGLUN - L2 (north of fishing dock)	2001 - 4 field 2002 - 8 field	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	2 - 11.8 (22-130%)	4 of 10		
			pH SU	6.5 - 9.0 (A&Wc, FBC, AgL)	8.7 - 9.5	4 of 12		
	Alpine/Luna Lake Watershed Group 319 Project UGLUN - L3 (3 meters above dam)	2001 - 4 field 2002 - 8 field	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	1.7 - 12.7 (18.6- 140%)	4 of 10		
			pH SU	8.5 - 9.0 (A&Wc, FBC, AgL)	8.6 - 9.6	5 of 12		
	ADEQ Lakes Program UGLUN-A (dam site) 100036	1999 - 1 partial suite 2002 - 1 partial suite	No exceedances					Note samples were taken on the same date at the two ADEQ sites.
	ADEQ Lakes Program UGLUN-B (mid lake) 100979	1999 - 1 partial suite 2002 - 1 partial suite	No exceedances					
	Summary Row	1998 - 2002	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	1.7 - 13.4 (18.6 - 152)	14 of 43	Not attaining	A total of 43 samples were collected at 6 sites by ADEQ, AGFD, and the Alpine/Luna Lake Watershed Group (for a 319 implementation project) in 1998 - 2001. A nutrient TMDL to address pH and dissolved oxygen problems was approved by EPA in 2000. Assessed as "not attaining" due to low dissolved oxygen and pH exceedances. Placed on the Planning List due to a fish kill in 1999. Fish kill may be evidence of a narrative standard violation. Also placed on the Planning List for TMDL-follow up monitoring and missing data for turbidity, <i>Escherichia coli</i> , dissolved metals (copper, cadmium, zinc), and total metals (mercury, copper, and lead).
	A&Wc Not attaining FC Inconclusive FBC Not attaining AgL Not attaining	43 samples 18 sampling events	pH SU	6.5 - 9.0 (A&Wc, FBC, AgL)	8.4 - 9.93	16 of 43	Not attaining	
Roper Lake AZL15040006-1250 A&Ww, FC, FBC	ADEQ Lakes Program UGROP - A (dam site) 100080	1998 - 1 partial suites 2000 - 3 partial suites	No exceedances					
	ADEQ Lakes Program UGROP - B (mid lake) 100975	1999 - 1 suite 2000 - 1 suites	No exceedances					
	ADEQ Lakes Program UGROP - Pond 100976	1999 - 1 suite 2000 - 2 suites	No exceedances					
	ADEQ Lakes Program UGROP - Canal 100978	2000 - 3 suites	No exceedances					

TABLE 21. UPPER GILA WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEARS SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS (MEAN)	FREQUENCY EXCEEDED STANDARD	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row	1998-2000	No exceedances					ADEQ collected 12 samples at 4 sites in 1998-2000. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameter: <i>Escherichia coli</i> .
	A&Ww Attaining FC Attaining FBC Inconclusive	12 samples 5 sampling events						

TABLE 22. UPPER GILA WATERSHED -- ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE				
SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
UPPER GILA WATERSHED -- STREAM ASSESSMENTS				
Ash Creek unnamed tributary at 32 45 37 / 109 52 22 - Gila River 15 miles AZ15040005-040B (Reach was split into warmwater and coldwater segments since last assessment. No current data in 040A.)	A&Ww Inconclusive FC Attaining FBC Attaining AgL Attaining Category 2 -- Attaining Some Uses	On the Planning List due to <u>missing core parameters</u> : dissolved metals (cadmium, copper and zinc).		
Blue River New Mexico border - KP Creek 21 miles AZ15040004-026	A&Wc Inconclusive FC Inconclusive FBC Attaining AgL Inconclusive AgL Inconclusive Category 2 -- Attaining Some Uses	On the Planning List due to <u>missing core parameters</u> : total boron, dissolved metals (copper, cadmium, and zinc), and total metals (mercury, manganese, lead, and copper).		
Blue River KP Creek - Strayhorse Creek 4 miles AZ15040004-025A (Reach was split into warmwater and coldwater segments since last assessment.)	A&Wc Inconclusive FC Inconclusive FBC Attaining AgL Inconclusive AgL Inconclusive Category 2 -- Attaining Some Uses	On the Planning List due to <u>missing core parameters</u> : total boron, total metals (mercury, manganese, lead, and copper), and dissolved metals (copper, cadmium, and zinc).		
Blue River Strayhorse Creek - San Francisco River 25 miles AZ15040004-025B (Reach was split into warmwater and coldwater segments since last assessment.)	A&Ww Attaining FC Attaining FBC Attaining AgL Attaining AgL Attaining Category 1 -- Attaining All Uses			
Bonita Creek Park Creek - Gila River 15 miles AZ15040005-030 Unique Water	A&Ww Attaining FC Attaining FBC Attaining DWS Attaining AgL Attaining Category 1 -- Attaining All Uses			
Campbell Blue Creek headwaters - Blue River 20 miles AZ15040004-028	A&Wc Inconclusive FC Attaining FBC Attaining AgL Attaining Category 2 -- Attaining Some Uses	On the Planning List due to <u>missing core parameter</u> : dissolved copper.		
Cave Creek headwaters - South Fork of Cave Creek 8 miles AZ15040006-852A Unique Water (Reach was split into warmwater and coldwater segments since last assessment.)	A&Wc Impaired FC Attaining FBC Attaining AgL Attaining AgL Attaining Category 5 -- Impaired		Add selenium to the 2004 303(d) List due to chronic exceedances in 2 of 2 sampling events).	

TABLE 22. UPPER GILA WATERSHED -- ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

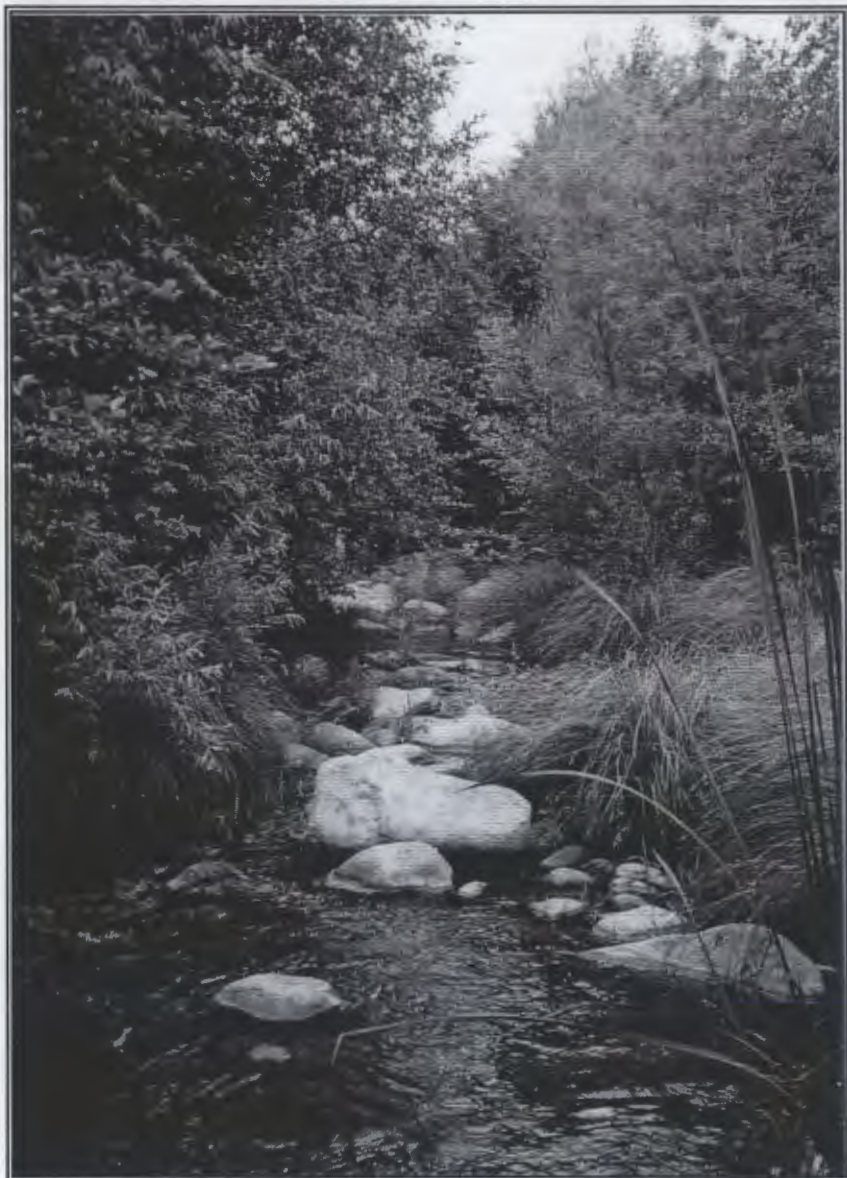
SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Cave Creek South Fork of Cave Creek - USFS boundary 2 miles AZ15040006-852B Unique Waters (Reach was split into warmwater and coldwater segments since last assessment.)	A&Ww Inconclusive FC Attaining FBC Attaining Agl Attaining Agl Attaining Category 2 -- Attaining Some Uses	On the Planning List due to former turbidity standard exceedance (1 of 9 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.		
Cave Creek, North Fork headwaters - Cave Creek 8 miles AZ15040006-856	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Category 3 -- Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Cave Creek, South Fork headwaters - Cave Creek 8 miles AZ15040006-849 Unique Water	A&Wc Attaining FC Attaining FBC Inconclusive Agl Attaining Agl Attaining Category 2 -- Attaining Some Uses	On the Planning List due to <i>Escherichia coli</i> exceedance (1 of 10 sampling events, occurred in 2000).		
Eagle Creek headwaters - unnamed tributary at 33 23 24 / 109 29 35 12 miles AZ15040005-028A (Reach was split into warmwater and coldwater segments since last assessment. No current data in 028B.)	A&Wc Inconclusive FC Inconclusive FBC Attaining DWS Inconclusive Agl Inconclusive Agl Inconclusive Category 2 -- Attaining Some Uses	On the Planning List due to missing core parameters: total boron, total metals (mercury, arsenic, chromium, lead, manganese, and copper), and dissolved metals (copper, cadmium, and zinc).		
Eagle Creek Willow Creek - Sheep Wash 6 miles AZ15040005-027	A&Ww Attaining FC Attaining FBC Attaining DWS Attaining Agl Attaining Agl Attaining Category 1 -- Attaining All Uses			
Eagle Creek Sheep Wash - Gila River 25 miles AZ15040005-025	A&Ww Attaining FC Attaining FBC Attaining DWS Attaining Agl Attaining Agl Attaining Category 1 -- Attaining All Uses			
East Turkey Creek headwaters - unnamed tributary at 31 58 22 / 109 12 17 8 miles AZ15040006-837A (Reach was split into warmwater and coldwater segments since last assessment. No current data in 837B.)	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 - Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Frye Canyon Creek headwaters - Frye Mesa Reservoir 5 miles AZ15040005-988A (Reach was split into warmwater and coldwater segments since last assessment. No current data in 988B.)	A&Wc Inconclusive FC Inconclusive FBC Attaining DWS Inconclusive Agl Inconclusive Category 2 -- Attaining Some Uses	On the Planning List due to missing core parameters: dissolved metals (copper, cadmium, and zinc) and total metals (mercury, arsenic, chromium, lead, and copper).		

TABLE 22. UPPER GILA WATERSHED -- ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Gila River New Mexico border - Bitter Creek 16 miles AZ15040002-004	A&Ww Inconclusive FC Attaining FBC Attaining Agl Attaining AgL Attaining Category 2 -- Attaining Some Uses	On the Planning List due to <u>chronic selenium</u> exceedance (1 of 1 sampling event). <u>Remove turbidity</u> from Planning List as turbidity is attaining standards (no exceedances in 4 samples).		
Gila River Skully Creek - San Francisco River 15 miles AZ15040002-001	A&Ww Impaired FC Attaining FBC Inconclusive Agl Attaining AgL Attaining Category 5 -- Impaired	On the Planning List due to: 1. Low <u>dissolved oxygen</u> (1 of 9 samples). 2. <u>Lead</u> exceedance (1 of 8 samples).	<u>Add selenium</u> to the 303(d) List due to chronic selenium exceedances (3 of 3 sampling events).	
Gila River San Francisco River - Eagle Creek 3 miles AZ15040005-024	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive AgL Inconclusive Category 3 -- Inconclusive	On the Planning List. No current monitoring data. Added to the Planning List in 2002 due to former <u>turbidity</u> standard exceedances (12 of 12 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.		
Gila River Eagle Creek - Bonita Creek 10 miles AZ15040005-023	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive AgL Inconclusive Category 3 -- Inconclusive	On the Planning List. No current monitoring data. Added in 2002 due to former <u>turbidity</u> standard exceedances (9 of 12 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.		
Gila River Bonita Creek - Yuma Wash 6 miles AZ15040005-022	A&Ww Impaired FC Attaining FBC Impaired Agl Attaining AgL Attaining Category 5 -- Impaired	On the Planning List due to: 1. Copper exceedances (1 of 23 samples). 2. <u>Lead</u> exceedances (4 of 21 samples). 3. <u>Suspended sediment concentration</u> (SSC) geometric mean exceedance.	<u>Add Escherichia coli</u> to the 303(d) List due to exceedances in 2 of 8 sampling events. Sediment added to the 2004 303(d) List by EPA, using exceedances of the former turbidity standard (7 of 24 samples) as evidence of a narrative bottom deposit violation. <u>Delist turbidity</u> . The turbidity standard was repealed in 2002.	
K P Creek headwaters - Blue River 12 miles AZ15040004-029 Unique Water	A&Wc Inconclusive FC Inconclusive FBC Attaining Agl Inconclusive Category 2 -- Attaining Some Uses	On the Planning List due to <u>missing core parameters</u> : dissolved metals (copper cadmium, and zinc) and total metals (mercury, lead, and copper).		
San Francisco River headwaters - New Mexico border 13 miles AZ15040004-023	A&Wc Impaired FC Attaining FBC Attaining Agl Attaining AgL Attaining Category 5 -- Impaired	Remove dissolved oxygen from the Planning List, as current data indicate that uses are being attained (only 1 of 10 samples did not meet the standard).	<u>Sediment</u> added to the 2004 303(d) List by EPA, using exceedances of the former turbidity standard (6 of 9 samples) as evidence of a narrative bottom deposit violation.	
San Francisco River New Mexico border - Blue River 21 miles AZ15040004-004	A&Ww Inconclusive FC Attaining FBC Attaining Agl Attaining AgL Attaining Category 2 -- Attaining Some Uses	On the Planning List due to former <u>turbidity</u> standard exceedance (1 of 6 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.		

TABLE 22. UPPER GILA WATERSHED -- ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
San Francisco River Blue River - Limestone Gulch 19 miles AZ15040004-003	A&Ww Attaining FC Attaining FBC Inconclusive Agl Attaining Agl Attaining Category 2 -- Attaining Some Uses	On the Planning List due to <u>Escherichia coli</u> exceedance (1 of 13 sampling events, occurred in 2002). Remove turbidity and beryllium from the Planning List. Data indicate that uses are being attained. Turbidity exceeded standards in only 3 of 16 samples. Arizona's beryllium standard was modified in 2002, and beryllium is not exceeding the new standards.		
San Francisco River Limestone Gulch - Gila River 13 miles AZ15040004-001	A&Ww Inconclusive FC Attaining FBC Inconclusive Agl Attaining Agl Attaining Category 2 -- Attaining Some Uses	On the Planning List due to: 1. <u>Copper</u> exceedance (1 of 22 sampling events, occurred in 2000). 2. <u>Escherichia coli</u> exceedance (1 of 17 sampling events, occurred in 2002). 3. Former <u>turbidity</u> standard exceedances (4 of 21 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.	Delist turbidity. The turbidity standard was repealed in 2002. Add to the Planning List due to exceedances of the former standard.	
Turkey Creek headwaters - Campbell Blue Creek 5 miles AZ15040004-060	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 -- Inconclusive	On the Planning List due to missing core parameters: <u>Escherichia coli</u> , dissolved metals (cadmium, copper, and zinc), and total metals (mercury, copper, and lead).		
UPPER GILA WATERSHED -- LAKE ASSESSMENTS				
Cluff Pond #3 15 acres AZL15040005-0370	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 3 -- Inconclusive Trophic status not calculated	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Dankworth Ponds 8 acres AZL15040006-0440	A&Wc Inconclusive FC Attaining FBC Inconclusive Category 2 -- Attaining Some Uses Trophic status -- Mesotrophic	On the Planning List due to: 1. <u>Selenium</u> exceedance (1 of 4 sampling events, occurred in 2000). 2. Former <u>turbidity</u> standard exceedance (1 of 2 samples). Investigation into the causes and sources of turbidity will be investigated during the next monitoring cycle for this watershed. 3. Missing core parameters: <u>Escherichia coli</u> and dissolved metals (copper, cadmium, and zinc).		
Luna Lake 120 acres AZL15040004-0840	A&Wc Not attaining FC Inconclusive FBC Not attaining Agl Not attaining Category 4A -- Not Attaining Trophic status -- Eutrophic	On the Planning List for: 1. TMDL follow-up monitoring for low <u>dissolved oxygen</u> (14 of 43 samples) and high <u>pH</u> (16 of 43 samples). 2. Missing core parameters: <u>Escherichia coli</u> , turbidity, dissolved metals (copper cadmium, and zinc), and total metals (mercury, copper, and lead). 3. <u>Fish kill</u> in 1999.		Nutrient TMDL to address low <u>dissolved oxygen</u> , high pH, and recurrent fish kills was approved by EPA in 2000. Placed on the Planning List in 2002 for TMDL follow-up monitoring. Fish kill in 1999 due to algal bloom die-off and associated high pH and low dissolved oxygen. This may be evidence of a narrative nutrient standard violation.
Roper Lake 25 acres AZL15040006-1250	A&Ww Attaining FC Attaining FBC Inconclusive Category 2 -- Attaining Some Uses Trophic status -- Mesotrophic	On the Planning List due to missing core parameter: <u>Escherichia coli</u> .		



Spring Creek, a tributary of Oak Creek, east of Clarkdale, Arizona.

The Verde Watershed

This watershed is defined by the Verde River drainage that flows into the Salt River, including Big Chino Wash and its tributaries. The Verde River and many of its tributaries are perennial waters.

This 6,624 square mile watershed has an approximate population of 153,000 people (2000 census). Although this is only 3% of the state population, several communities are located in this watershed: Payson, Sedona, Cottonwood, Verde Valley, Prescott, and the southern outskirts of Flagstaff. Land ownership is approximately: 23% private land, 10% state land, 65% federal land, and 2% Tribal land. Primary land uses are open range grazing, irrigated agriculture, recreation, forestry, and some mining.

Elevations range from more than 12,000 feet (above sea level) in the San Francisco Mountains to about 1,600 feet as the Verde River flows into the Salt River. The watershed is split between warmwater aquatic communities below 5,000 feet, and coldwater communities above 5,000 feet where perennial waters exist.

The assessment – Assessments were completed for 45 stream reaches and 14 lakes in this watershed. Of the 511 stream miles assessed, 31 miles were attaining all uses (two reaches), and 85 miles (eight reaches) were assessed as impaired or not attaining a use. Of the 4,898 lake acres assessed, none were attaining all uses, and 410 acres (four lakes) were assessed as impaired or not attaining a use. All others were inconclusive or attaining some uses.

A watershed assessment map follows on the next page, illustrating stream and lake assessments by category. The Verde **monitoring table** (Table 23) following the map summarizes the water quality data used in the assessment. It is followed by the **assessment table** (Table 24), which bridges current assessments with past assessments and impaired water identification. Important to note in this table are comments regarding previous 303(d) lists (what has been added and removed), category designations (1 through 5), references to potential actions by EPA, and status of TMDLs.

More detailed information on how to use these tables can be found at the beginning of this chapter (p. IV-1). Assessment methods and criteria can be found in Chapter III.

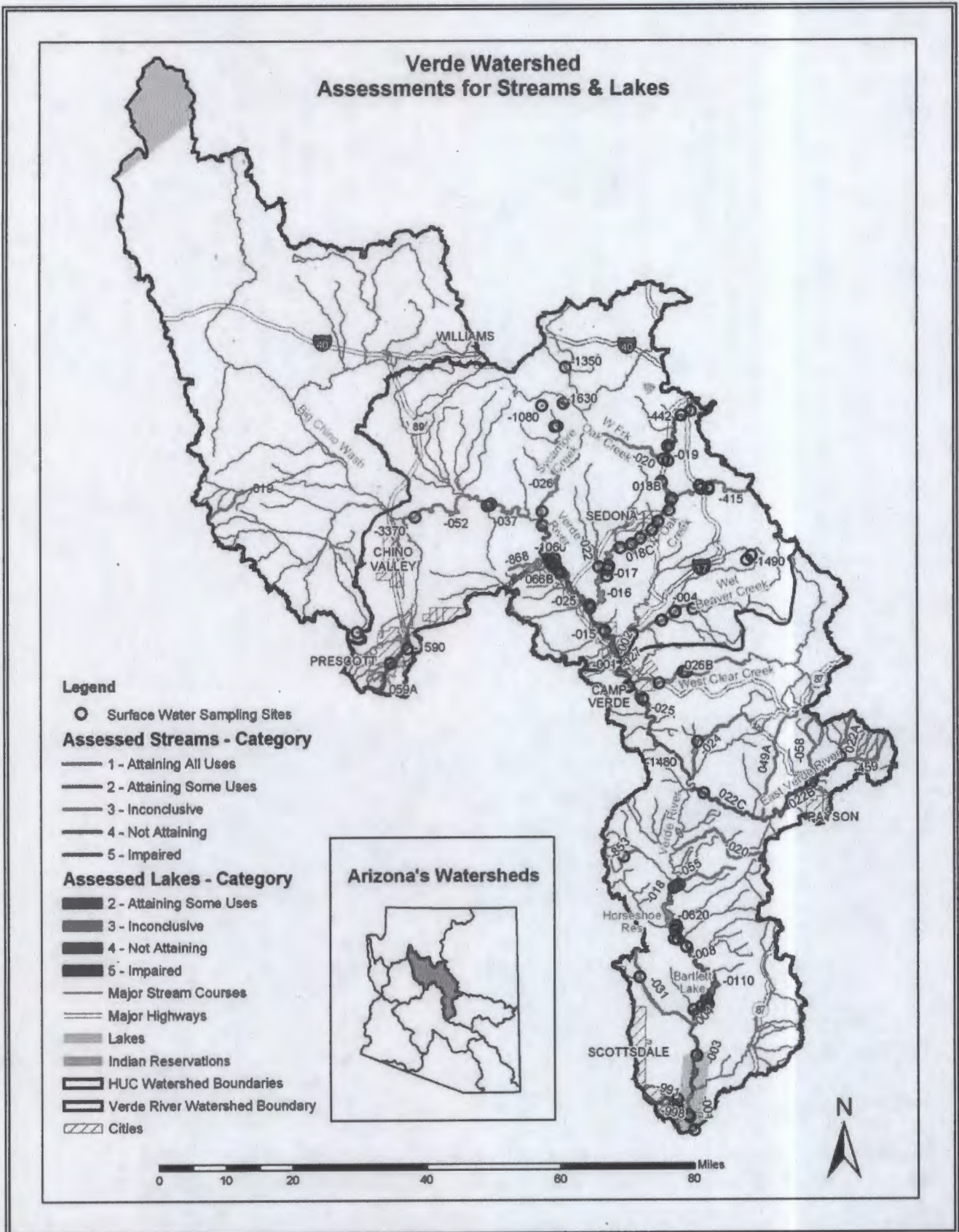


Figure 24. Watershed monitoring and assessments

TABLE 23. VERDE WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
STREAM MONITORING DATA								
Beaver Creek Dry Beaver Creek - Verde River AZ15060202-002 A&Ww, FC, FBC, AgL	ADEQ TMDL Program At SILT0001 VRBEV003.27	1999 - 4 partial suite	Turbidity (former standard) NTU	50 (A&Ww)	5 - 190	1 of 3		
	ADEQ Ambient Monitoring and TMDL Program at Camp Verde VRBEV003.18 100496	1998 - 3 field 1999 - 5 field + 1 partial suite	Turbidity (former standard) NTU	50 (A&Ww)	2 - 117	3 of 8		
	ADEQ TMDL Program Montezuma's Castle VRBEV002.62 100706	1999 - 5 field + 1 partial	Turbidity (former standard) NTU	50 (A&Ww)	2 - 218	1 of 6		
	USGS Ambient Monitoring VRBEV02.44 101542	1999 - 1 partial suite	No exceedances					
	ADEQ TMDL Program at Foam0001 VRBEV002.02	2000 - 2 partial suites	No exceedances					
	ADEQ Ambient Monitoring and TMDL Program VRBEV001.28 101346	1999 - 6 partial suites	No exceedances					
	ADEQ Ambient Monitoring Above Verde River VRBEV000.32 100722	1999 - 1 partial suite	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	1998-2000 29 samples 12 sampling events	Turbidity (former standard) NTU	50 (A&Ww)	2 - 190	5 of 26	Inconclusive	ADEQ and USGS collected a total of 29 samples at 7 sites from 1998-2002. Assessed as "Inconclusive" due to exceedances of the former turbidity standard. Reach was on the 2002 303(d) List due to turbidity. The Aquatic and Wildlife use is assessed as "Inconclusive" and placed on the Planning List due to exceedances of the former turbidity standard. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring. Also on the Planning List due to missing core parameters: <i>Escherichia coli</i> , dissolved metals (cadmium, copper, and zinc), and total metals (mercury, copper, and lead).

TABLE 23. VERDE WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
Camp Creek headwaters - Verde River AZ15060203-031 A&Ww, FC, FBC, AgL	ADEQ Biocriteria Program Above Blue Wash confluence VRCMP009.30 100760	1998 - 1 partial suite	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	1998 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Colony Wash headwaters - Fort McDowell Indian Reservation AZ15060203-998 A&Ww, PBC	USGS Special Investigation VRCLW001.43 101519	1998 - 1 partial suite	No exceedances					
	Summary Row A&Ww Inconclusive PBC Inconclusive	1998 1 sampling event	No exceedances					Insufficient monitoring data to assess.
East Verde River headwaters - Ellison Creek AZ15060203-022A A&Wc, FC, FBC, DWS, AgL	ADEQ Ambient Monitoring Above Second Crossing VREVR015.97 100788	1999 - 2 full suites	Turbidity (former standard) NTU	10 (A&Wc)	28 - 54	2 of 2		Lab reporting limits for dissolved copper were too high to use results for assessment.
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive AgL Inconclusive	1999 2 sampling events	Turbidity (former standard) NTU	10 (A&Wc)	27 - 54	2 of 2		The reach is assessed as "Inconclusive" due to insufficient monitoring data and exceedances of the former turbidity standard. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring. Missing core parameters: dissolved copper.
East Verde River Ellison Creek - American Gulch AZ15060203-022B A&Ww, FC, FBC, DWS, AgL	ADEQ / USGS Fixed Station Above Highway 87 bridge VREVR012.28 100474	1998 - 1 partial suite 1999 - 5 full suites 2000 - 3 full suites 2001 - 4 full suites 2002 - 5 full suites	Lead (total) µg/L	15 (DWS, FBC)	<5 - 21	1 of 18		
			Mercury (total) µg/L	0.6 (FC)	<0.5 - 1.2	1 of 18		
			Nitrogen (total) µg/L	3.0 (A&Ww)	<0.05 - 4.6	1 of 18		
			Selenium (total) µg/L	2 (A&Ww chronic)	<5 - 5.3	2 of 2		Lab reporting limits for 16 other samples were too high to use results for assessment.
			Turbidity (former standard) NTU	50 (A&Ww)	2.16 - >1000	3 of 16		
	Summary Row A&Ww Impaired FC Attaining FBC Attaining DWS Attaining AgL Attaining	1998-2002 18 samples 18 sampling events	Lead (total) µg/L	15 (DWS, FBC)	<5 - 21	1 of 18	Attaining	USGS collected 18 samples in 1998-2002. Assessed as "impaired" due to selenium exceedances.
			Mercury (total) µg/L	0.6 (FC)	<0.5 - 1.2	1 of 18	Attaining	
			Nitrogen (total) µg/L	3.0 (A&Ww)	<0.05 - 4.6	1 of 18	Attaining	

TABLE 23. VERDE WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
			Selenium (total) µg/L	2 (A&Ww chronic)	<5 - 5.3	2 of 2 events	Impaired	
			Turbidity (former standard) NTU	50 (A&Ww)	2.16 - >1000	3 of 16	Attaining	
East Verde River American Gulch - Verde River AZ15060203-022C A&Ww, FC, FBC, DWS, Agl, Agl	USGS Station #09507980 Near Childs VREVR001.42 100739	1998 - 6 full suites 1999 - 5 full suites 2000 - 4 full suites 2001 - 4 full suites 2002 - 4 full suites	Arsenic (dissolved) µg/L	360 (A&Ww acute)	4 - 388	1 of 23		Arsenic concentrations naturally high in ground water. Ground water upwelling when surface flows are less than 5 cfs results in high arsenic levels in the stream and is a natural occurrence. Not included in final assessment.
				190 (A&Ww chronic)		2 of 23		
			Arsenic (total) µg/L	50 (DWS, FBC)	4.0 - 394	7 of 23		
			Boron (total) µg/L	630 (DWS)		4 of 20		
				1000 (Agl)		2 of 20		
			Dissolved oxygen mg/L	>6 (90% saturation) (A&Ww)	5.6 - 10.6	1 of 23		
			Boron (total) µg/L	630 (DWS)	50 - 1730	4 of 20	Inconclusive	
				1000 (Agl)		2 of 20	Attaining	
Fossil Creek headwaters - Verde River AZ15060203-024 A&Ww, FC, FBC, Agl	ADEQ Ambient Monitoring Above Salley Mae Wash VRFOS005.67 100785	1999 - 2 full suites	No exceedances					Both samples were collected in the summer.
			No exceedances					Insufficient monitoring data to assess.

TABLE 23. VERDE WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
Grande Wash headwaters - Ashbrook Wash 15060203-991 A&Ww, FBC, FC (tributary rule)	USGS Special Investigation VRGRW000.30 101596	1998 - 1 full suite 1999 - 1 full suite 2000 - 1 partial suite	<i>Escherichia coli</i> CFU/100 ml	235	1000 - >20,000	2 of 2		Lab reporting limits for dissolved cadmium were too high to assess standards.
	Summary Row A&Ww Inconclusive FBC Not attaining FC Inconclusive	1998 - 2000 3 sampling events	<i>Escherichia coli</i> CFU/100 ml	235	1000 - >20,000	2 of 2 events (In 1999 and 2000)	Not attaining	USGS collected 3 samples in 1998 - 2000. Assessed as "not attaining" due to <i>Escherichia coli</i> exceedances. Fountain Hills WWTP has now changed disposal method to recharge, thereby eliminating discharges to this wash. <i>E. coli</i> levels are expected to meet water quality standards for the next assessment. Placed on the Planning List for follow-up monitoring to verify water quality problems have been resolved. Also placed on the Planning List due to missing core parameters: dissolved oxygen, turbidity/SSC, dissolved cadmium, and total mercury.
Granite Creek headwaters - Willow Creek AZ15060202-059A A&Wc, FC, FBC, Agl, AgL	USGS Ambient Monitoring #09502960 VRGRA021.70 101580	1998 - 1 partial suite 1999 - 2 partial suites 2000 - 2 partial suites 2001 - 1 partial suite	<i>Escherichia coli</i> CFU/100 ml	235 (FBC single sample max.)	71 - >8000	2 of 4		The lab reporting limits for some cadmium and copper analysis were too high to use results for assessment.
				126 (FBC geometric mean)	71 - >8000	overall geometric mean = 406		One <i>E. coli</i> exceedance was during a very high flow event. (Insufficient samples for 30-day geo mean)
			Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	4.3 - 10.8 (53 - 162%)	3 of 5		
			Mercury (dissolved) µg/L	0.01 (A&Wc chronic)	<0.1- 0.3	1 of 2		Lab reporting limit for 2 other mercury samples were too high to use results for assessment.
	AGFD Ambient Monitoring VRGRA021.46	2000 - 1 partial suite	Dissolved oxygen	>7.0 (90% saturation) (A&Wc)	6.2 (77.1%) saturation	1 of 1		May be natural condition. Sample taken in July 2000 during a drought.

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STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row	1998-2001 7 sampling events	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	71 - >8000	2 of 4 events (In 2000 and 2001)	Inconclusive (see comment)	<p>USGS and AGFD collected a total of 7 samples at 2 sites in 1998-2001. EPA assessed this reach as "Impaired" due to low dissolved oxygen.</p> <p>Placed on the Planning List due to <i>Escherichia coli</i> and mercury exceedances and missing core parameters: turbidity/SSC, total metals (copper, lead, manganese, and mercury) and dissolved metals (cadmium and copper).</p> <p>ADEQ has assessed the FBC designated use as "inconclusive" for the following reasons:</p> <p>1. One of the two <i>E. coli</i> exceedances was close to the standard (result is 300, standard is 235) and bacterial lab methods provide an estimate of bacteria density (most probable number). (See discussion in Chapter III.)</p> <p>2. Need at least 5 bacteria samples within a 30-day period to determine the 30-day geometric mean. (The Impaired Water Identification Rule requires 2 exceedances of the 30-day geometric mean and does not recognize the overall geometric mean established in the newly adopted Surface Water Standards.)</p>
	A&Wc FC FBC Agl Agl	Impaired Inconclusive Inconclusive Inconclusive Inconclusive		126 (FBC - geo mean)	71 - >8000	overall geometric mean = 406	Inconclusive (need two exceedances of 30-day geometric mean - see comment)	
			Dissolved oxygen mg/L	>7.0 (90% saturation) (A&Wc)	4.3 - 10.8 (53 - 162%)	4 of 6	Impaired	
			Mercury (dissolved) µg/L	0.01 (A&Wc chronic)	<0.1 - 0.3	1 of 2 events	Inconclusive	
Munds Creek headwaters - Oak Creek AZ15060202-415 A&Ww, FC, FBC (tributary rule)	ADEQ TMDL Program Above O'Dell Lake VRMUN004.3	1998 - 3 partial suites	Turbidity (former standard) NTU	50 (A&Ww)	5 - 69	1 of 3		
	ADEQ TMDL Program Southeast trib to O'Dell Lake VRMUN004.1	1996 - 2 partial suites	No exceedances					
	ADEQ TMDL Program West trib of Munds Creek Above Pinewood WWTP VRMUN003.5	1996 - 3 partial suites	Turbidity (former standard) NTU	50 (A&Ww)	5 - 67	1 of 3		
	ADEQ TMDL Program Below Pinewood WWTP VRMUN003.4	1998 - 3 partial suites	No exceedances					
	ADEQ TMDL Program Above Oak Creek VRMUN000.1	1998 - 3 partial suites	No exceedances					

TABLE 23. VERDE WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive	1998 14 samples 3 sampling events	Turbidity (former standard) NTU	50 (A&Ww)	4 - 69	2 of 14 (same sampling event)	Attaining	ADEQ collected 14 samples at 5 sites in 1998. Assessed as "Inconclusive" and placed on the Planning List due to insufficient seasonal representation and missing core parameters. Missing core parameters: dissolved metals (copper, cadmium, and zinc), and total mercury. All samples were collected in March, April, and May.
Oak Creek headwaters - West Fork Oak Creek AZ15060202-019 A&Wc, FC, FBC, DWS, Agl, Agl Unique Water	ADEQ TMDL Program Above Pumphouse Wash VROAK025.3	1998 - 4 partial suites	No exceedances					
	ADEQ TMDL Program Below Pumphouse Wash VROAK025.2	1998 - 4 partial suites	Turbidity (former standard) NTU	10 (A&Wc)	1 - 20	2 of 4		
	ADEQ Biocriteria Program Below Cave Springs Camp VROAK023.21 100608	1998 - 1 partial suite	No exceedances					
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive	1998 9 samples 5 sampling events	Turbidity (former standard) NTU	10 (A&Wc)	1 - 20	2 of 8	Inconclusive (see comment)	ADEQ collected 9 samples at 3 sites in 1998. Assessed as "Inconclusive" and placed on the Planning List due to missing core parameters and exceedances of the former turbidity standard. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring. Missing core parameters: total fluoride, total boron, dissolved metals (copper, cadmium, and zinc), and total metals (mercury, arsenic, chromium, lead, manganese, and copper).
Oak Creek At Slide Rock State Park only AZ15060202-018B A&Ww, FC, FBC, DWS, Agl, Agl Unique Water	ADEQ TMDL Program Above Slide Rock VROAK020.03	1998 - 1 pH, nutrients	No exceedances					
	Slide Rock State Park Escherichia coli Monitoring Upstream VROAK020.00A	1998 - 2002 685 Escherichia coli samples only	Escherichia coli CFU/100 ml	235 (FBC single sample max)	0 - 2419	39 of 682		
	Slide Rock State Park Escherichia coli Monitoring Wind-eride VROAK020.00B	1998 - 2002 680 Escherichia coli samples only	Escherichia coli CFU/100 ml	235 (FBC single sample max)	0 - 2419	32 of 680		
	Slide Rock State Park Escherichia coli Monitoring Large Pool VROAK020.00C	1998 - 2002 682 Escherichia coli samples only	Escherichia coli CFU/100 ml	235 (FBC single sample max)	0 - 2419	43 of 680		

TABLE 23. VERDE WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
	Slide Rock State Park Foot Bridge <i>Escherichia coli</i> Monitoring VROAK020.00D	1998 - 2002 682 <i>Escherichia coli</i> samples only	<i>Escherichia coli</i> CFU/100 ml	235 (FBC single sample max)	0 - 2419	101 of 682		
	Slide Rock State Park at Highway Bridge <i>Escherichia coli</i> Monitoring VROAK020.00E	1998 - 2002 679 <i>Escherichia coli</i> samples only	<i>Escherichia coli</i> CFU/100 ml	235 (FBC single sample max)	0 - 2419	54 of 682		
	ADEQ/TMDL Below Slide Rock VROAK019.97	1998 - 1 partial suite	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Not attaining DWS Inconclusive Agl Inconclusive Agl Inconclusive	1998-2002 3408 <i>Escherichia coli</i> samples 2 other sampling events	<i>Escherichia coli</i> CFU/100 ml	235 (FBC single sample maximum)	0 - 2419	269 of 3408 samples 101 of 682 sampling events	Not attaining	ADEQ collected 2 samples at 2 sites in 1998. Slide Rock State Park collected a total of 3408 <i>Escherichia coli</i> samples at 5 sites in 1998-2002. <i>Escherichia coli</i> TMDLs were approved by EPA in 1999. Assessed as "not attaining" due to <i>Escherichia coli</i> exceedances and placed on the Planning List for TMDL follow-up monitoring and for missing core parameters. Also placed on the Planning List due to beach closures following elevated levels of <i>Escherichia coli</i> . Beach closures have occurred every summer during the assessment period. Missing core parameters: total fluoride, total boron, dissolved metals (copper, cadmium, and zinc), and total metals (mercury, arsenic, chromium, lead, manganese, and copper).
Oak Creek Below Slide Rock State Park- Dry Creek AZ15080202-018C A&Ww, FC, FBC, DWS, Agl, Agl Unique Water	ADEQ TMDL Program Above Munds Creek VROAK018.3	1998 - 3 partial suites	No exceedances					
	ADEQ TMDL Program Below Munds Creek VROAK018.1	1998 - 3 partial suites	No exceedances					
	ADEQ Ambient Monitoring Below Grasshopper Point VROAK016.57 100459	1998 - 3 partial suites	No exceedances					
	ADEQ Ambient Monitoring At Highway 179 bridge VROAK014.54 100460	1998 - 3 full suites	No exceedances					
	ADEQ Ambient Monitoring At Chavez Crossing VROAK013.11 100461	1998 - 3 full suites	No exceedances					

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			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
	ADEQ TMDL Program Below Redrock Crossing VROAK011.4	1998 - 1 partial suites (2 samples, only 2 days apart)	No exceedances					
	ADEQ Biocriteria Program At Red Rock State Park VROAK010.29 100612	1999 - 1 full suite	No exceedances					
	ADEQ Fixed Station Network At Redrock Crossing VROAK009.33 100492	1998 - 4 full suites 1999 - 4 full suites 2000 - 4 full suites 2001 - 4 full suites 2002 - 4 full suites	Beryllium (total) µg/L	4.0 (DWS, FBC)	<0.5 - 4.1	1 of 20		
			Manganese (total) µg/L	980 (DWS)	<50 - 1300	1 of 20		
			Total Nitrogen mg/L	2.5 Unique Water (A&Ww)	<0.5 - 4.97	1 of 19		
			Total Phosphorus mg/L	0.3 Unique Water (A&Ww)	< 0.02 - 1.5	1 of 20		
			Turbidity (former standard) NTU	50 (A&Ww)	1 - >1000	2 of 20		
	Summary Row A&Ww Attaining FC Attaining FBC Attaining DWS Attaining Agl Attaining Agl Attaining	1998 - 2002 37 samples 25 sampling events	Beryllium (total) µg/L	4.0 (DWS, FBC)	<0.5 - 4.1	1 of 29	Attaining	ADEQ collected 37 samples at 8 sites in 1998-2002. Assessed as "attaining all uses."
			Manganese (total) µg/L	980 (DWS)	<50 - 1300	1 of 29	Attaining	
			Total Nitrogen mg/L	2.5 Unique Water (A&Ww)	<0.5 - 4.97	1 of 37	Attaining	
			Total Phosphorus mg/L	0.3 Unique Water (A&Ww)	< 0.02 - 1.5	1 of 37	Attaining	
			Turbidity (former standard) NTU	50 (A&Ww)	1 - >1000	2 of 37	Attaining	
Oak Creek Dry Creek - Spring Creek AZ15060202-017 A&Ww, FC, FBC, DWS, Agl, Agl Unique Water	ADEQ TMDL Program At Page Springs Bridge VROAK006.4	1998 - 1 partial suite	No exceedances					
	ADEQ Ambient Monitoring Below Page Springs VROAK005.91 100613	1999 - 1 partial suite	No exceedances					

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			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive	1998 - 1999 2 sampling events	No exceedances					Insufficient monitoring data to assess.
Oak Creek Spring Creek - Verde River AZ15060202-016 A&Ww, FC, FBC, DWS, Agl, Agl Unique Water	ADEQ TMDL Program Above Mormon Crossing VROAK004.9	1998 - 1 partial suite	No exceedances					
	ADEQ TMDL Program Above Verde River VROAK000.1	1998 - 1 partial suite	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive	1998 2 samples 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Oak Creek, West Fork headwaters - Oak Creek AZ15060202-020 A&Wc, FC, FBC, Agl Unique Water	ADEQ Biocriteria Program Above Fourth Trail Crossing VRWOK000.64 100693	1998 - 1 partial suite	No exceedances					
	Summary Row A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive	1998 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Pumphouse Wash headwaters - Oak Creek AZ15060202-442 A&Wc, FC, FBC (tributary rule)	ADEQ TMDL Program Above Kachina Village VRPMW008.4	1998 - 3 partial suites	Total Phosphorus mg/L	1.0 (A&Ww single sample maximum)	0.21 - 2.04	1 of 3		
			Turbidity (former standard) NTU	50 (A&Ww)	44 - 690	2 of 3		
	ADEQ TMDL Program Below Kachina Village VRPMW007.5	1998 - 3 partial suites	No exceedances					
	ADEQ TMDL Program Above Oak Creek VRPMW002.7	1998 - 4 partial suites	No exceedances					
	ADEQ Fixed Station Network Below Highway 89A bridge VRPMW002.63 100495	1998 - 1 field, dissolved copper and cadmium	No exceedances					

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			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row	1998	Total Phosphorus mg/L	1.0 (A&Ww single sample maximum)	0.214 - 2.04	1 of 10	Attaining	ADEQ collected 11 samples at 4 sites in 1998. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: dissolved metals (copper, cadmium, and zinc), and total mercury.
	A&Ww Inconclusive FC Inconclusive FBC Attaining	11 samples 5 sampling events	Turbidity (former standard) NTU	50 (A&Ww)	44 - 690	2 of 10	Attaining	
Roundtree Canyon Creek headwaters - Tangle Creek AZ15060203-853 A&Ww, FC, FBC, AgL	ADEQ Biocriteria Program 3 miles above Tangle Creek VRROU001.79 100631	1998 - 1 partial suite	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	1998 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Spring Creek Coffee Creek - Oak Creek AZ15060202-022 A&Ww, FC, FBC, AgL, AgL	ADEQ Biocriteria Program Near road crossing VRSPN001.36 100650	1998 - 1 partial suite	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive AgL Inconclusive	1998 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Sycamore Creek Cedar Creek - Verde River AZ15060202-026 A&Ww, FC, FBC, AgL, AgL	ADEQ Ambient Monitoring Below Summers Springs VRSYW001.4 100199	1998 - 1 partial suite	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive AgL Inconclusive	1998 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Sycamore Creek headwaters - Verde River AZ15060203-055 A&Ww, FC, FBC, AgL	ADEQ Biocriteria Program Tributary of Horseshoe Res. VRSYH000.16 100656	1998 - 1 partial suite	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive	1998 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Verde River Granite Creek - Hell Canyon AZ15060202-052 A&Ww, FC, FBC, AgL, AgL	ADEQ Biocriteria Program East of Paulden VRVER095.73 100764	1998 - 1 partial suite	No exceedances					

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			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive	1998 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Verde River Hell Canyon - unnamed reach 15060202-065 AZ15060202-038 A&Ww, FC, FBC, Agl, AgL	ADEQ Ambient Monitoring Above Perkinsville bridge VRVER095.54 100672	1999 - 1 full suite	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive	1999 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Verde River unnamed reach 15060202-065 - Railroad Draw AZ15060202-037 A&Ww, FC, FBC, Agl, AgL	USGS Special study VRVER095.74 101569	2002 - 1 nutrients + selenium (dissolved)	No exceedances					
	ADEQ Ambient Monitoring Below Perkinsville Bridge VRVER095.65 100487	1998 - 1 full suite 1999 - 6 full suites 2000 - 3 full suites 2001 - 3 full + 1 partial suite 2002 - 3 full suites	Arsenic (total) µg/L	50 (FBC)	5 - 240	1 of 17		
			Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	5.7 - 10.3 (76 - 144 %)	1 of 16		
			Escherichia coli CFU/100 ml	235 (FBC)	0 - 2,300	1 of 15		Exceedance during high flow event.
			Mercury (total) µg/L	0.6 (FC)	<0.5 - 0.79	1 of 17		
			Turbidity (former standard) NTU	50 (A&Ww)	7 - 677	3 of 17		
	Summary Row	1998-2002 18 samples 18 sampling events	Arsenic (total) µg/L	50 (FBC)	5 - 240	1 of 17	Attaining	ADEQ and USGS collected 16 samples at 2 sites in 1998-2002. Assessed as "attaining all uses."
	A&Ww Attaining FC Attaining FBC Attaining Agl Attaining Agl Attaining		Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	5.7 - 10.3 (76 - 144 %)	1 of 16	Attaining	
			Escherichia coli CFU/100 ml	235 (FBC)	0 - 2,300	1 of 15 events (none in last 3 years)	Attaining	
			Mercury (total) µg/L	0.6 (FC)	<0.5 - 0.79	1 of 17	Attaining	
			Turbidity (former standard) NTU	50 (A&Ww)	7 - 677	3 of 17	Attaining	

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			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
Verde River Sycamore Creek - Oak Creek AZ15060202-025 A&Ww, FC, FBC, AgI, AgL	USGS Fixed Station #09504000 Near Clarkdale VRVER091.61 100738	1998 - 6 full suites 1999 - 4 full suites 2000 - 4 full suites 2001 - 4 full suites 2002 - 5 full suites	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	0 - 240	1 of 23		Lab reporting limits for 22 other mercury samples too high to use results for assessment.
			Mercury (dissolved) µg/L	0.01 (A&Ww chronic)	<0.1 - 0.1	1 of 1		
			Turbidity (former standard) NTU	50 (A&Ww)	0.76 - 61	1 of 23		
	USGS Monitoring Below Tapco Substation VRVER087.70 101552	1999 - 1 full suite	No exceedances					
	USGS Monitoring Above sewage pond VRVER086.92 101549	1999 - 1 full suite	No exceedances					
	USGS Monitoring At sewage pond VRVER086.81 101548	1999 - 1 full suite	No exceedances					
	USGS Monitoring Below diversion dam VRVER086.62 101550	1999 - 1 full suite	No exceedances					
	Phelps Dodge Permit Instream Monitoring Upstream of Tuzigoot seeps VRVER085.61	1998 - 3 partial suites 1999 - 4 partial suites 2000 - 4 partial suites 2001 - 4 partial suites 2002 - 4 partial suites	Lead (total) µg/L	15 (FBC)	<5 - 40	2 of 19		
	Phelps Dodge Permit Instream Monitoring Below Tuzigoot seeps VRVER085.60	1998 - 3 partial suites 1999 - 4 partial suites 2000 - 4 partial suites 2001 - 4 partial suites 2002 - 4 partial suites	No exceedances					
	USGS Monitoring At Tuzigoot Bridge VRVER085.49 101546	1999 - 1 full suite	No exceedances					
	USGS Monitoring Above Dead Horse State Park VRVER084.38 101544	1999 - 1 full suite	No exceedances					
	ADEQ Ambient and Biocriteria At Dead Horse State Park VRVER84.38 100482	1999 - 1 full suite	No exceedances					

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			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	USGS Monitoring Below Dead Horse State Park VRVER084.42 101545	1999 - 1 full suite	No exceedances					
	Summary Row	1998 - 2002	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	0 - 240	1 of 25 events (In 2000)	Inconclusive	ADEQ, USGS, and Phelps Dodge collected a total of 69 samples at 11 sites in 1998-2002. Assessed as "attaining some uses" and placed on the Planning List due to mercury and <i>Escherichia coli</i> exceedances.
	A&Ww Inconclusive FC Attaining FBC Inconclusive Agl Attaining AgL Attaining	69 samples 34 sampling events	Lead (total) µg/L	15 (FBC)	<5 - 40	2 of 63	Attaining	
			Mercury (dissolved) µg/L	0.01 (A&Ww chronic)	<0.1 - 0.1	1 of 1 event (Insufficient events)	Inconclusive	
			Turbidity (former standard) NTU	50 (A&Ww)	0.76 - 61	1 of 25	Attaining	
Verde River Oak Creek - Beaver Creek AZ15060202-015 A&Ww, FC, FBC, Agl, AgL	ADEQ TMDL Program Below Oak Creek VRVER078.8	1998 - 1 partial suite	No exceedances					
	ADEQ Biocriteria & TMDL At 1000 Trails VRVER078.76 100481	1999 - 1 partial suite	No exceedances					
	ADEQ Biocriteria & TMDL Program Across from Reservation VRVER075.14 100718	1999 - 1 partial suite	No exceedances					
	Summary Row A&Ww Not attaining* FC Inconclusive FBC Inconclusive Agl Inconclusive AgL Inconclusive	1998 - 1999 3 samples 2 sampling events	No exceedances					Insufficient monitoring data to assess (only 2 sampling events). *A turbidity TMDL was approved by EPA in 2002. Reach will remain "not attaining" until turbidity or suspended sediment concentration (SSC) monitoring indicate design uses are being attained.
Verde River HUC border 15060203 - West Clear Creek AZ15060203-027 A&Ww, FC, FBC, Agl, AgL	ADEQ Biocriteria Program Above West Clear Creek VRVER066.74 100723	1999 - 1 partial suite	No exceedances					
	USGS Fixed Station #09505570 Above West Clear Creek VRVER066.64 100750	1998 - 5 full suites	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	60 - 240	1 of 5		

TABLE 23. VERDE WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
Verde River West Clear Creek - Fossil Creek AZ15060203-025 A&Ww, FC, FBC, Agl, AgL	Summary Row	1998 - 1999 6 sampling events	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	60 - 240	1 of 5 events (in 1998, do not have 3 years sampling after)	Inconclusive	ADEQ and USGS collected 6 samples at 2 sites in 1998-1999. Assessed as "attaining some uses" and placed on the Planning List due to <i>Escherichia coli</i> exceedance and missing core parameters: dissolved metals (copper, cadmium, and zinc).
	A&Ww Inconclusive FC Attaining FBC Inconclusive Agl Attaining Agl Attaining							
	ADEQ TMDL Monitoring At Beasley Flat VRVER064.80 100677	1999 - 1 partial suite 2002 - 1 partial suite	Turbidity (former standard) NTU	50 (A&Ww)	77	1 of 1		Also exceeded SSC standard (SSC =133, standard is 80), but lacked minimum of 4 samples to calculate geometric mean.
	ADEQ Fixed Station At Beasley Flat VRVER064.68 100477	1998 - 1 full suite 1999 - 4 full suites 2000 - 3 full suites 2001 - 4 full suites 2002 - 4 full suites	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	<2 - 1,125	1 of 15		
Verde River Tangle Creek - Ister Flat AZ15060203-018 A&Ww, FC, FBC, Agl, AgL			Selenium µg/L	2 (A&Ww chronic)	<5 - 5.4	1 of 1		Lab reporting limits for 15 other samples were too high to use results for assessment.
			Turbidity (former standard) NTU	50 (A&Ww)	<5 - 998	5 of 16		Only 1 SSC sample collected.
	Summary Row	1999 - 2000 18 samples	<i>Escherichia coli</i> CFU/100 ml	235 (FBC)	<2 - 1,125	1 of 16 events (in 1999, 3 years sampling OK after)	Attaining	ADEQ and USGS collected 18 samples at 2 sites in 1999-2000.
	A&Ww Not attaining FC Attaining FBC Attaining Agl Attaining Agl Attaining							
			Selenium µg/L	2 (A&Ww chronic)	<5 - 5.4	1 of 1 event (insufficient events)	Inconclusive	A turbidity TMDL for reaches immediately upstream of this reach was approved by EPA in 2002. Assessed as "not attaining" because the turbidity loading on this reach will be addressed by the turbidity TMDL for the Verde River. Although current turbidity data are inconclusive, the reach will remain "not attaining" until turbidity or suspended sediment concentration (new sediment standard) data indicate designated uses are being attained.
			Turbidity (former standard) NTU	50 (A&Ww)	1 - 998	6 of 17	Inconclusive (Not attaining)	Also placed on the Planning List due to selenium exceedance.
Verde River Tangle Creek - Ister Flat AZ15060203-018 A&Ww, FC, FBC, Agl, AgL	Univ. of Az. Reservoir Project Above Horseshoe Reservoir VRVER036.68	2002 - 2 partial suites	Turbidity (former standard) NTU	50 (A&Ww)	4.7 - >1000	1 of 2		
	USGS Fixed Station #09508500 Below Tangle Creek VRVER036.48 100740	1998 - 5 full suites 1999 - 6 full suites 2000 - 4 full suites 2001 - 4 full suites 2002 - 4 full suites	<i>Escherichia coli</i> CFU/100 mg/L	235 (FBC)	<1.0 - 770	1 of 22		
			Turbidity (former standard) NTU	50 (A&Ww)	0.2 - 170	4 of 22		
	SRP Ambient Monitoring Above Horseshoe Reservoir VRVER032.74	1998 - 15 partial suites 1999 - 14 partial suites 2000 - 15 partial suites 2001 - 11 partial suites 2002 - 12 partial suites	Copper (dissolved) µg/L	varies by hardness (A&Ww chronic)	<10 - 30	1 of 58		

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STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row	1998 - 2002	Copper (dissolved) µg/L	varies by hardness (A&Ww chronic)	<10 - 30	1 of 58 events	Attaining	University of Arizona, USGS, and SRP collected 92 samples at 3 sites in 1998-2002. Reach is assessed as "attaining some uses" and placed on the Planning List due to: 1. <i>Escherichia coli</i> exceedances. 2. Former turbidity standard exceedances. Monitoring will be scheduled to determine whether bottom deposit violations are occurring.
	A&Ww Inconclusive FC Attaining FBC Inconclusive Agl Attaining Agl Attaining	92 samples 85 sampling events	<i>Escherichia coli</i> CFU/100 mg/L	235 (FBC)	<1.0 - 770	1 of 24 events (in 2000)	Inconclusive	
			Turbidity (former standard) NTU	50 (A&Ww)	0.3 - 170	5 of 24	Inconclusive	
Verde River Horseshoe Dam - Alder Creek AZ15060203-008 A&Ww, FC, FBC, Agl, Agl.	AGFD Ambient Monitoring Below Horseshoe Reservoir VRVER030.17	1999 - 1 partial suite	No exceedances					
	Univ. of Az. Reservoir Project Below Horseshoe Reservoir VRVER028.85	2002 - 2 partial suites	No exceedances					
	AGFD Ambient Monitoring Below Mesquite Rec. Area VRVER028.70	1999 - 1 partial suite	No exceedances					
	ADEQ Ambient Monitoring Below Horseshoe Reservoir VEVER027.54 100831	1999 - 1 full suite	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Attaining	1999 - 2002 5 sampling events	No exceedances					ADEQ, AGFD, and University of Arizona collected 5 samples at 4 sites in 1999 - 2002. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: <i>Escherichia coli</i> , total boron, dissolved metals (copper, cadmium, and zinc), and total mercury.
Verde River Bartlett Dam - Camp Creek AZ15060203-004 A&Ww, FC, FBC, DWS, Agl, Agl.	Univ. of Az. Reservoir Project Below Bartlett Lake VRVER018.51	2002 - 2 partial suites	No exceedances					
	USGS Fixed Station #09510000 Below Bartlett Dam VRVER018.13 100741	1999 - 4 full suites 2000 - 6 full suites 2001 - 5 full suites 2002 - 3 full suites	No exceedances					
	SRP Routine Monitoring Below Bartlett Dam VRVER017.55	1998 - 10 partial suites 1999 - 13 partial suites 2000 - 13 partial suites 2001 - 11 partial suites 2002 - 12 partial suites	Copper (dissolved) µg/L	varies by hardness (A&Ww chronic)	<10 - 55	4 of 57		
				varies by hardness (A&Ww acute)	<10 - 55	1 of 57		
			Selenium (dissolved) µg/L	2 (A&Ww total, chronic)	<5 - 13	4 of 4		Lab reporting limits for 56 other selenium samples were too high to use results for assessment.

TABLE 23. VERDE WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row	1998 - 2002	Copper (dissolved) µg/L	varies by hardness (A&Ww chronic)	<10 - 55	4 of 80 events	Impaired	University of Arizona, USGS, and SRP collected 79 samples at 3 sites in 1998 - 2002. Assessed as "Impaired" due to copper and selenium exceedances.
	A&Ww Impaired FC Attaining FBC Attaining DWS Attaining Agl Attaining Agl Attaining	79 samples		varies by hardness (A&Ww acute)	< 10 - 55	1 of 80 events (In 1999, 3 years OK after)	Attaining	
			Selenium (dissolved) µg/L	2 (A&Ww total, chronic)	<5 - 13	4 of 23 events	Impaired	
Verde River Camp Creek - Sycamore Creek 15060203-003 A&Ww, FBC, FC, DWS, Agl, Agl	USGS Fort McDowell Study Fort McDowell north boundary VRVER011.34 101522	1998 - 2 partial suites 1999 - 4 partial suites	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Attaining DWS Inconclusive Agl Inconclusive Agl Inconclusive	1998 - 1999 6 sampling events	No exceedances					USGS collected 6 samples in 1998-1999. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: dissolved cadmium and total metals (mercury, arsenic, chromium, lead, manganese, and copper).
Verde River Sycamore Creek - Salt River 15060203-001 A&Ww, FBC, FC, DWS, Agl, Agl	Univ. of AZ - Reservoir Project for ADEQ Above Salt River confluence VRVER003.18	2002 - 1 partial suite	No exceedances					
	AGFD Ambient Monitoring Above Salt River confluence VRVER000.18	1999 - 2 partial suites	No exceedances					
	Summary Row A&Ww Inconclusive FBC Inconclusive FC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive	1999 - 2002 3 sampling events	No exceedances					AGFD and University of Arizona collected 3 samples in 1999-2002. Assessed as "Inconclusive" and placed on the Planning List due to insufficient monitoring events for all core parameters (only 1 or 2 samples for each).
West Clear Creek Meadow Canyon - Verde River AZ15060203-0268 A&Ww, FC, FBC, Agl, Agl	ADEQ Biocriteria Program Above Bull Pen Ranch VRWCL006.09 100204	1998 - 1 partial suite 1999 - 1 partial suite	No exceedances					
	USGS Fixed Station #09505800 Near Camp Verde VRWCL005.79 100749	1998 - 12 partial suites 1999 - 12 partial suites 2000 - 3 partial suites 2001 - 9 partial suites 2002 - 6 partial suites	No exceedances					
	ADEQ Biocriteria Program At campground VRWCL002.91 100689	1999 - 1 partial suite	No exceedances					

TABLE 23. VERDE WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
	Summary Row	1998-2002	No exceedances					ADEQ and USGS collected 45 samples at 3 sites in 1998-2002. Assessed as "Inconclusive" and placed on the Planning List due to missing core parameters: <i>Escherichia coli</i> , dissolved zinc, total boron, and total metals (mercury, manganese, copper, and lead).
	A&Ww Inconclusive	45 samples						
	FC Inconclusive							
	FBC Inconclusive							
	AgI Inconclusive							
	AgL Inconclusive							
Wet Beaver Creek Long Canyon - Rarick Canyon AZ15060202-004 A&Ww, FC, FBC, AgI, AgL	ADEQ Biocriteria & TMDL Above USGS gage at Rimrock VRWBV006.79 100497	1998 - 1 partial suite 1999 - 4 partial suites	No exceedances					
	ADEQ Biocriteria Program At campground VRWBV005.06 100684	1999 - 1 partial suite	No exceedances					
	ADEQ TMDL Program At camp ground VRBEV004.95	1999 - 5 partial suites	No exceedances					
	ADEQ TMDL Program At Montezuma Well VRWBV003.18	1999 - 4 partial suites	No exceedances					
	Summary Row	1998 - 2002	No exceedances					ADEQ collected 15 samples at 4 sites in 1998-2002. Assessed as "Inconclusive" and placed on the Planning List due to missing core parameters: <i>Escherichia coli</i> , total boron, dissolved metals (copper and zinc), and total metals (mercury, manganese, copper, and lead).
	A&Ww Inconclusive	15 samples						
	FC Inconclusive	7 sampling events						
	FBC Inconclusive							
	AgI Inconclusive							
	AgL Inconclusive							
Wet Beaver Creek Rarick Canyon - Dry Beaver Creek AZ15060202-003 A&Ww, FC, FBC, AgI, AgL	USGS Ambient Monitoring VRWBV003.16 101543	2002 - 1 partial suite	No exceedances					
	Summary Row	2002	No exceedances					Insufficient monitoring data to assess.
	A&Ww Inconclusive	1 sampling event						
	FC Inconclusive							
	FBC Inconclusive							
	AgI Inconclusive							
	AgL Inconclusive							
LAKE MONITORING DATA								
Bartlett Lake AZL15060203-0110 A&Ww, FC, FBC, DWS, AgI, AgL	ADEQ Lakes Program VRBAR-A (deepest) 100009	1998 - 3 partial suites 1999 - 3 partial suites 2000 - 2 partial suites 2001 - 1 full + 1 partial suites 2002 - 1 full suite	No exceedances					All 4 <i>Escherichia coli</i> samples were collected by ADEQ on the same date (one event).
	ADEQ Lakes Program VRBAR-B (mid lake) 100010	1998 - 3 full suites 1999 - 3 full suites 2000 - 1 partial suites 2001 - 2 full suites 2002 - 1 full suite	No exceedances					

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STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
	ADEQ Lakes Program VRBAR-C 100011	1998 - 3 full suites 1999 - 3 full suites 2000 - 1 partial suites 2001 - 2 full suites 2002 - 1 full suite	Turbidity (former standard) NTU	25 (A&Ww)	3 - 28	1 of 7		The turbidity exceedance at site C was due to an upstream dam release and natural mixing flows in this area of the lake; therefore, the turbidity was not included in the final assessment.
	ADEQ Lakes Program VRBAR-NTU1 thru NTU5 100980	1999 - Turbidity + field at 5 sites 2000 - Turbidity + field at 5 sites	No exceedances					
	ADEQ Lakes Program VRBAR - MAR1 (marina) 100986	2001 - 1 field, MTBE 2002 - 1 MTBE	No exceedances					
	ADEQ Lakes Program VRBAR - SW (swim area) 101321	2002 - 1 <i>Escherichia coli</i>	No exceedances					
	AGFD Ambient Monitoring VRBAR - DAM SITE	2000 - 1 partial suite	No exceedances					
	AGFD Ambient Monitoring VRBAR - MID LAKE	2000 - 1 partial suite	No exceedances					
	AGFD Ambient Monitoring VRBAR - BARTLETT FLATS	2000 - 1 partial suite	No exceedances					
	Univ. of Az. Reservoir Project Bartlett Lake VRBAR - A	1999 - 4 partial suites 2000 - 8 partial suites 2002 - 2 full suites	pH SU	6.5 - 9.0 (A&Ww, FBC, Agl, Agl)	7.7 - 9.3	1 of 14		
	Summary Row A&Ww Inconclusive FC Attaining FBC Inconclusive DWS Attaining Agl Attaining Agl Attaining	1998 - 2002 61 samples 31 sampling events	pH (SU)	6.5 - 9.0 (A&Ww, FBC, Agl, Agl)	7.7 - 9.3	1 of 60	Attaining	ADEQ, AGFD, and University of Arizona collected 61 samples at 14 sites in 1998-2002. Assessed as "attaining some uses" and placed on the Planning List due to missing core parameters: <i>Escherichia coli</i> and dissolved metals (copper, cadmium, and zinc).
Fountain Lake AZL15060203-0003 A&Ww, FBC, FC (tributary rule)	USGS Special Investigation in Fountain Hills, Arizona VRFH1 101597	1998 - 1 partial suite	No exceedances					
	Summary Row A&Ww Inconclusive FBC Inconclusive FC Inconclusive	1998 1 sampling event	No exceedances					Insufficient monitoring data to assess.
Granite Basin Lake AZL15060202-0580 A&Ww, FC, FBC, Agl, AgL	ADEQ Lakes Program VRGBL - A (deepest), VRGBL-B (mid-lake), VRGBL-BR (boat ramp) 100024, 100025, 101398 (sites combined for assessment because they were not spatially independent)	1999 - 3 full + 1 partial suite 2002 - 3 partial suites	Ammonia mg/L	varies by temperature and pH (A&Ww chronic)	0.03 - 7.65	1 of 6		Lab reporting limits for dissolved metals were too high to use results for assessment.
			Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	3.6 - 11.2 (39%-142%)	2 of 6		Dissolved oxygen violations were determined to be natural due to lake turnover. Not included in final assessment.
			pH (low) SU	6.5 - 9.0 (A&Ww, FBC, Agl, Agl)	7.0 - 9.7	2 of 6		
	Summary Row A&Ww Inconclusive FC Attaining FBC Inconclusive Agl Inconclusive Agl Inconclusive	1998-2002 12 samples 8 sampling events	Ammonia mg/L	varies by hardness (A&Ww chronic)	0.03 - 7.65	1 of 6 events	Inconclusive	ADEQ collected 12 samples at 3 sites in 1998-2002. Assessed as "attaining some uses" and placed on the Planning List due to high pH, ammonia exceedance, and missing core parameters: <i>Escherichia coli</i> and dissolved metals (copper, cadmium, and zinc).

TABLE 23. VERDE WATERSHED -- 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
			pH (high) SU	6.5 - 9.0 (A&Ww, FBC, Agl, Agl)	7.0 - 9.5	2 of 6	Inconclusive	
Horseshoe Reservoir AZL15060203-0620 A&Ww, FC, FBC, Agl, AgL	Univ. of Az. Reservoir Project VRHSR - A (deepest)	1999 - 4 partial suites 2000 - 4 partial suites	Turbidity (former standard) NTU	25 (A&Ww)	2 - 90	3 of 8		
	Univ. of Az. Reservoir Project VRHSR - B (mid lake)	1999 - 4 partial suites 2000 - 3 partial suites	pH SU	6.5 - 9.0 (A&Ww, FBC, Agl, Agl)	8.2 - 9.3	1 of 7		
			Turbidity (former standard) NTU	25 (A&Ww)	0.8 - 32	1 of 7		
	Univ. of Az. Reservoir Project VRHSR - C	1999 - 2 partial suites 2000 - 1 partial suite	No exceedances					
	AGFD Ambient Monitoring VRHSR - East Spill Tower	1999 - 1 partial suite	No exceedances					
	Summary Row A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive	1999 - 2000 19 samples 9 sampling events	pH SU	6.5 - 9.0 (A&Ww, FBC, Agl, Agl)	8.2 - 9.3	1 of 19	Attaining	University of Arizona and AGFD collected 19 samples at 4 sites in 1999 - 2000. Assessed as "inconclusive" and placed on the Planning List due to missing core parameters and exceedances of the former turbidity standard. Further investigation into the causes and sources of turbidity will be scheduled during the next monitoring cycle for this watershed.
			Turbidity (former standard) NTU	25 (A&Ww)	0.8 - 90	4 of 18	Inconclusive (see comment)	Missing core parameters: <i>Escherichia coli</i> , total boron, dissolved metals (copper, cadmium, and zinc), and total metals (mercury, manganese, copper, and lead).
J D Dam Lake AZL15060202-0700 A&Wc, FBC, FC, Agl, AgL	ADEQ Lakes Program VRJDD - A (deepest) 101286	2001 - 4 partial suites	pH SU	6.5 - 9.0 (A&Ww, FBC, Agl, Agl)	6.2 - 8.9	1 of 4		Used worst case pH of 1 of 10 samples taken. Algal bloom noted at the time.
	ADEQ Lakes Program VRJDD - BR (boat ramp) 101318	2002 - 1 <i>Escherichia coli</i>	No exceedances					
	AGFD Ambient Monitoring VRJDD - M (mid lake)	2001 - 1 partial suite	No exceedances					
	Summary Row A&Wc Inconclusive FC Attaining FBC Inconclusive Agl Attaining Agl Attaining	2001 - 2002 6 sampling events	pH SU	6.5 - 9.0 (A&Ww, FBC)	6.2 - 8.9	1 of 5	Inconclusive	ADEQ and AGFD collected samples in 2001 - 2002. Assessed as "attaining some uses" and placed on the Planning List due to low pH and missing core parameters: <i>Escherichia coli</i> and dissolved metals (copper and cadmium).
Pecks Lake AZL15060202-1060 A&Wc, FC, FBC, Agl, AgL	ADEQ Lakes Program VRPEC-A 100063	1999 - 4 partial suites 2002 - 1 partial suite	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	5.0 - 11.7	1 of 5		
	ADEQ Lakes Program VRPEC-AA 100511	1999 - 1 partial suite 2000 - 1 partial suite	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	2.0 - 8.3 (18 - 85%)	1 of 2		
	ADEQ Lakes Program VRPEC-F 1005113	1999 - 2 partial suites 2002 - 1 partial suite	No exceedances					

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STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					COMMENTS
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
	Summary Row	1999 - 2002	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	2 - 11.7 (18 - 85%)	2 of 7	Inconclusive (Not attaining)	ADEQ collected 11 samples at 3 sites in 1999-2002.
	A&Wc Not attaining FC Attaining FBC Inconclusive Agl Attaining AgL Attaining	11 samples 6 sampling events						A nutrient TMDL to address dissolved oxygen and pH problems was approved by EPA in 2000. Although current dissolved oxygen data are inconclusive, lake is assessed as "not attaining" until dissolved oxygen data indicate designated uses are being attained.
Perkins Tank AZL15060202-1080 A&Wc, FC, FBC, AgL	ADEQ Lakes Program VRPER-A (deepest) 101296	2001 - 1 partial suites	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.2 - 6.6 (68 - 74%)	1 of 1		
			Turbidity (former standard) NTU	10 (A&Wc)	3 - 13	1 of 1		
	AGFD Lakes Program VRPER-MID (mid lake)	2001 - 1 partial suite	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	4.6 (60%)	1 of 1		
	Summary Row	2001	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	4.6 - 6.6 (65 - 106%)	2 of 2	Inconclusive	
	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive	2 sampling events						
			Turbidity (former standard) NTU	10 (A&Wc)	3 - 13	1 of 1	Inconclusive (see comment)	
Scholze Lake AZL15060202-1350 A&Ww, FC, FBC, AgL	ADEQ Lakes Program VRSch-A (deepest) VRSch 101295	2001 - 3 partial suites 2002 - 1 full suite	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	4.8 - 7.7 (44 - 81%)	1 of 3		
			Lead (dissolved) µg/L	varies by hardness (A&Ww chronic)	4	1 of 1		
			Total nitrogen mg/L	3.0 (A&Ww)	2.47 - 3.36	2 of 4		
			Turbidity (former standard) NTU	25 (A&Ww)	8 - 78	1 of 3		
	Summary Row	2001 - 2002	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	4.8 - 7.7 (44 - 81%)	1 of 3	Inconclusive	ADEQ collected 4 samples in 2001-2002. Assessed as "Inconclusive" and placed on the Planning List due to low dissolved oxygen and exceedances of lead, nitrogen, and the former turbidity standard. Further investigation into the causes and sources of turbidity will be scheduled during the next monitoring cycle for this watershed.
	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive	4 sampling events						
			Lead (dissolved) µg/L	varies by hardness (A&Ww chronic)	4	1 of 1 event (insufficient events)	Inconclusive	
			Total nitrogen mg/L	3.0 (A&Ww)	2.47 - 3.36	2 of 4	Inconclusive	
			Turbidity (former standard) NTU	25 (A&Ww)	8 - 78	1 of 3	Inconclusive (see comment)	Also placed on the Planning List due to missing core parameters: <i>Escherichia coli</i> , dissolved metals (copper and cadmium), and total metals (mercury, copper, and lead).

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			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	
Stoneman Lake AZL15060202-1490 A&Wc, FC, FBC, Agl, AgL	ADEQ Lakes Program VRSTN-A (deepest) 100086	1999 - 5 partial suites 2001 - 1 partial suite	pH SU	6.5-9.0 (A&Wc, FBC, Agl, AgL)	8.7 - 9.9	2 of 4		
	ADEQ Lakes Program VRSTN-B (mid lake) 100698	1999 - 4 partial suites 2001 - 1 partial suite	Arsenic (total) µg/L	50 (FBC)	28 - 107	1 of 4		
			Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.7 - 14.5 (82 - 83%)	1 of 3		
			pH SU	6.5 - 9.0 (A&Wc, FBC, Agl, AgL)	8.8 - 9.6	2 of 5		
	ADEQ Lakes Program Central portion of backwaters VRSTN-MIDBW	1999 - 1 partial suite	No exceedances					
	ADEQ Lakes Program East portion, next to dike VRSTN - 1	1999 - 1 partial suite	pH SU	6.5 - 9.0 (A&Wc, FBC, Agl, AgL)	9.6	1 of 1		
	ADEQ Lakes Program North east bank of the dike VRSTN - 1E	1999 - 1 partial suite	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	6.1 (65%)	1 of 1		Dissolved oxygen samples taken in backwater and back of dike are not representative of lake conditions. Low dissolved oxygen is due to natural ground water recharge. Not included in final assessment.
	ADEQ Lakes Program Northeast portion of backwater VRSTN - 1EE	1999 - 1 partial suite	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	4.2 (47%)	1 of 1		
	ADEQ Lakes Program Central portion of north backwater VRSTN - 1S	1999 - 1 partial suite	pH SU	6.5 - 9.0 (A&Wc, FBC, Agl, AgL)	9.5	1 of 1		
	AGFD Lakes Monitoring VRSTN - MID (mid lake)	2001 - 1 partial suite	Arsenic µg/L	50 (FBC)	70.6	1 of 1		
	Summary Row A&Wc Not attaining FC Attaining FBC Not attaining Agl Not attaining AgL Not attaining	1999 - 2001 17 samples 7 sampling events	Arsenic µg/L	50 FBC	28 - 107	2 of 8	Inconclusive	ADEQ and AGFD collected 17 samples at 8 sites in 1998-2002.
			Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	4.2 - 14.5 (47 - 106%)	1 of 12	Attaining	A nutrient TMDL to address low dissolved oxygen and high pH was approved by EPA in 2000. Assessed as "not attaining" due to pH exceedances. Although current pH data are inconclusive, this lake will remain "not attaining" until pH data indicate designated uses are being attained.
			pH SU	6.5 - 9.0 (A&Wc, FBC, Agl, AgL)	8.1 - 9.9	6 of 10	Inconclusive (Not attaining)	Placed on the Planning List for arsenic exceedances, missing core parameter (<i>Escherichia coli</i>), and TMDL follow-up monitoring. Note that ADEQ is investigating establishing site-specific standards on this lake.
Watson Lake AZL15060202-1590 A&Ww, FC, FBC, Agl, AgL	ADEQ Lakes Program VRWAT-A (deepest) 101353	2002 - 1 full + 1 partial suite	Dissolved oxygen mg/L	> 6.0 (90% saturation) (A&Ww)	5.6 - 8.5 (64 - 85%)	1 of 2		Lake was completely dry in 2002.
			Total nitrogen mg/L	3.0 (A&Ww)	1.24 - 4.85	1 of 2		

TABLE 23. VERDE WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	ADEQ Lakes Program VRWAT - BR (boat ramp) 101397	2002 - 1 <i>Escherichia coli</i>	No exceedances					
	AGFD Ambient Monitoring VRWAT - BR (boat ramp)	2001 - 1 pH	No exceedances					
	AGFD Fish kill Investigation VRWAT-DAM (dam site)	2000 - 1 partial suite	pH SU	6.5 - 9.0 (A&Ww, FBC, Agl, AgL)	9.8	1 of 1		Field notes indicate that the lake was full of algae. Golden shiner fish kill in 2000.
			Total nitrogen mg/L	3.0 (A&Ww)	4	1 of 1		
	AGFD Fish kill investigation VRWAT - SO (south end)	2000 - 1 partial suite	pH SU	6.5 - 9.0 (A&Ww, FBC, Agl, AgL)	9.5	1 of 1		
	Summary Row A&Ww Impaired FC Inconclusive FBC Impaired Agl Impaired AgL Impaired	2000 - 2002 6 samples 4 sampling events	Dissolved oxygen mg/L	> 6.0 90% saturation (A&Ww)	5.6 - 9.1 (64 - 85%)	1 of 5	Impaired	ADEQ and AGFD collected 6 samples at 5 sites in 2000 - 2002. EPA assessed this lake as "Impaired" due to nitrogen, dissolved oxygen and pH exceedances.
			pH SU	6.5 - 9.0 (A&Ww, FBC, Agl, AgL)	7.5 - 9.8	2 of 5	Impaired	Placed on the Planning List due to missing core parameters and a fish kill in 2000.
			Total nitrogen mg/L	3.0 (A&Ww)	0.89 - 4.85	2 of 5	Impaired	Missing core parameters: <i>Escherichia coli</i> , turbidity, total boron, dissolved metals (copper, cadmium, and zinc), and total metals (mercury, copper, and lead).
Whitehorse Lake AZL15060202-1630 A&Wc, FC, FBC, DWS, Agl, AgL	ADEQ Lakes Program VRWHH - A 100090	1999 - 3 full suites 2000 - 3 full suites 2001 - 6 full suites 2002 - 1 full suite	Ammonia mg/L	varies by hardness (A&Wc chronic)	0.11 - 1.24	1 of 9		Fish kill reported in 1999. Lab reporting limits for some dissolved metals samples were too high to assess standards.
			Dissolved oxygen mg/L	> 7.0 90% saturation (A&Wc)	0.6 - 10.4 (7-145%)	3 of 11		
			Nickel (total)	140 (DWS)	<10 - 210	1 of 11		
			pH SU	6.5 - 9.0 (A&Wc, FBC, AgL) 4.5 - 9.0 (Agl) 5.0 - 9.0 (DWS)	6.2 - 9.6	1 of 13 too high 1 of 13 too low		
			Turbidity (former standard) NTU	10 (A&Wc)	21 - 46	9 of 9		
	ADEQ Lakes Program VRWHH-B 100724	1999 - 3 full suites	Ammonia mg/L	varies by hardness (A&Wc chronic)	0.08 - 0.42	1 of 2		
			Dissolved oxygen mg/L	> 7.0 90% saturation (A&Wc)	5.8 - 10.0 (73-148%)	1 of 3		
			pH SU	6.5 - 9.0 (A&Wc, FBC, AgL) 4.5 - 9.0 (Agl) 5.0 - 9.0 (DWS)	7.1 - 9.6	1 of 3		
	ADEQ Lakes Program VRWHH - BR (boat ramp) 101317	2002 - 1 <i>Escherichia coli</i>	No exceedances					

TABLE 23. VERDE WATERSHED – 2004 ASSESSMENT MONITORING DATA

STREAM NAME SEGMENT WATERBODY ID DESIGNATED USES	AGENCY AND PROGRAM SITE DESCRIPTION SITE CODE ADEQ DATABASE ID	YEAR SAMPLED NUMBER AND TYPE OF SAMPLES	EXCEEDANCES OF STANDARDS BY SITE					
			PARAMETER UNITS	STANDARD (DESIGNATED USE)	RANGE OF RESULTS	FREQUENCY EXCEEDED	DESIGNATED USE SUPPORT	COMMENTS
	Summary Row	1999-2002	Ammonia mg/L	varies by temperature and pH (A&Wc chronic)	0.08 - 1.24	1 of 10 events	Inconclusive	<p>ADEQ collected 17 samples at 3 sites from 1999-2002.</p> <p>*EPA placed this lake on the 2002 303(d) List for dissolved oxygen based on 5 exceedances in 11 samples. Although Arizona's Impaired Water Identification Rule requires a minimum of 20 samples to base a listing decision for dissolved oxygen, the lake cannot be delisted until a TMDL is complete or dissolved oxygen data indicate designated uses are being attained. Therefore, the lake is assessed as "impaired."</p> <p>Placed on the Planning List due to:</p> <ol style="list-style-type: none"> 1. Ammonia exceedance. 2. A fish kill in 1999 that may be evidence of a narrative standard violation. 3. Missing core parameters: <i>Escherichia coli</i> and dissolved metals (copper, cadmium, and zinc). 4. Exceedances of the former turbidity standard. Further investigation into the causes and sources of turbidity will be scheduled during the next monitoring cycle for this watershed.
	A&Wc FC FBC DWS Agl Agl	Impaired* Inconclusive Inconclusive Attaining Attaining Attaining	Dissolved oxygen mg/L	> 7.0 (90% saturation) (A&Wc)	5.75-9.98 (73-148%)	4 of 14	Inconclusive (Impaired)	
		17 samples 13 sampling events	Nickel (total)	140 (DWS)	<10 - 210	1 of 11	Attaining	
			pH SU	6.5 - 9.0 (A&Wc, FBC, AgL) 4.5 - 9.0 (Agl) 5.0 - 9.0 (DWS)	6.2 - 9.6	2 of 16 high 1 of 16 low	Attaining	
			Turbidity (former standard) NTU	10 (A&Wc)	21 - 46	9 of 9	Inconclusive	

TABLE 24. VERDE WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
VERDE WATERSHED — STREAM ASSESSMENTS				
Apeche Creek headwaters - Walnut Creek 8 miles AZ15060201-019	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List (no current monitoring data). Added in 2002 due to missing core parameters.		
Beaver Creek Dry Beaver Creek - Verde River 9 miles AZ15060202-002	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List due to: 1. Former turbidity standard exceedances (5 of 26 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring. 2. <u>Missing core parameters</u> : <i>Escherichia coli</i> , dissolved metals (cadmium, copper, and zinc), and total metals (mercury, copper, and lead).	Delist turbidity. Standard repealed in 2002. The Aquatic and Wildlife use is assessed as "inconclusive" and placed on the Planning List due to exceedances of the former turbidity standard (5 of 26 samples exceed).	
Bitter Creek Jerome WWTP - 2.5 miles below 3 miles AZ15060202-066B	A&Wdw Inconclusive PBC Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List (no current monitoring data). Added in 2002 due to insufficient monitoring data.		
Bitter Creek, <u>unnamed tributary of</u> headwaters - Bitter Creek 7 miles AZ15060202-868	A&Ww Inconclusive FBC Inconclusive FC Inconclusive Category 3 — Inconclusive	On the Planning List (no current monitoring data). Added in 2002 due to past exceedances of <u>cadmium, copper, pH, and zinc</u> standards.		
Camp Creek headwaters - Verde River 19 miles AZ15060203-031	A&Ww Inconclusive FBC Inconclusive FC Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Colony Wash headwaters - Fort McDowell Indian Reservation 3 miles AZ15060203-998	A&We Inconclusive PBC Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
East Verde River headwaters - Ellison Creek 8 miles AZ15060203-022A (Reach was split into coldwater and warmwater segments since the last assessment.)	A&Wc Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List due to: 1. Insufficient monitoring events to assess (only 2 sampling events). 2. Former <u>turbidity</u> standard exceedances (2 of 2 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring.		
East Verde River Ellison Creek - American Gulch 20 miles AZ15060203-022B (Reach was split into coldwater and warmwater segments since the last assessment.)	A&Ww Impaired FC Attaining FBC Attaining DWS Attaining Agl Attaining Agl Attaining Category 5 — Impaired		Add selenium to the 2004 303(d) List due to chronic exceedances in 2 of 2 samples.	

TABLE 24. VERDE WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
East Verde River American Gulch - Verde River 25 miles AZ15060203-022C (Reach renamed as "C" because of split discussed above.)	A&Ww Attaining FC Attaining FBC Attaining DWS Inconclusive Agl Attaining AgL Attaining Category 2 -- Attaining Some Uses	On the Planning List due to <u>boron</u> exceedances (4 of 20 samples). ADEQ is considering a Use Attainability Analysis for Domestic Water Source due to high levels of naturally occurring <u>arsenic</u> (7 of 23 samples exceeded standards).		
Ellison Creek headwaters - East Verde River 11 miles AZ15060203-459	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 -- Inconclusive	On the Planning List (no current monitoring data). Added in 2002 due to insufficient sampling events and missing core parameters.		
Fossil Creek headwaters - Verde River 20 miles AZ15060203-024	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 -- Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 2 samples).		
Grande Wash headwaters - Ashbrook Wash 6 miles AZ15060203-991	A&Ww Inconclusive FBC Not attaining FC Inconclusive Category 4B-- Not attaining	On the Planning List for follow-up <i>Escherichia coli</i> monitoring (standard exceeded in 2 of 2 sampling events). Fountain Hills WWTP has now changed disposal method to recharge, thereby eliminating discharges to this wash. <i>E. coli</i> levels are expected to meet water quality standards for the next assessment. Also on the Planning List due to missing <u>core</u> parameters: dissolved cadmium, dissolved oxygen, turbidity/SSC, total mercury.		
Granite Creek headwaters - Willow Creek 13 miles AZ15060202-059A (Reach was split into coldwater and warmwater segments since the last assessment. No current data in 059B.)	A&Wc Impaired FC Inconclusive FBC Inconclusive Agl Inconclusive AgL Inconclusive Category 5 -- Impaired	On the Planning List due to: 1. <i>Escherichia coli</i> exceedances (2 of 4 sampling events for single sample maximum in 2000, 1 overall geometric mean exceedance). 2. <u>Chronic mercury</u> exceedances (1 of 2 sampling events). 3. No current turbidity data; however, added to the Planning List in 2002 due to exceedances of the former <u>turbidity</u> standard in 1 of 2 samples. Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring. 4. <u>Missing core parameters</u> : turbidity/SSC, dissolved metals (cadmium and copper), and total metals (mercury, manganese, copper, and lead).	Dissolved oxygen added to the 2004 303(d) List by EPA (4 of 6 samples exceeded standard).	
Munds Creek headwaters - Oak Creek 17 miles AZ15060202-415	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 -- Inconclusive	On the to the Planning List due to: 1. <u>Missing core parameters</u> : dissolved metals (copper, cadmium, and zinc) and total mercury. 2. <u>Insufficient seasonal representation</u> .		
Oak Creek headwaters - West Fork Oak Creek 7 miles AZ15060202-019 Unique Waters	A&Wc Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive AgL Inconclusive Category 3 -- Inconclusive	On the Planning List due to 1. Former <u>turbidity</u> standard exceedances (2 of 8 samples). Monitoring will be scheduled to determine whether suspended sediment or bottom deposit violations are occurring. 2. <u>Missing core parameters</u> : total fluoride, total boron, dissolved metals (copper, cadmium, and zinc), and total metals (mercury, arsenic, chromium, lead, manganese, and copper).		

TABLE 24. VERDE WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Oak Creek At Slide Rock State Park 1 mile AZ15060202-018B Unique Water (Reach was renumbered since last assessment - previously 018A.)	A&Ww Inconclusive FC Inconclusive FBC Not attaining DWS Inconclusive Agl Inconclusive Agl Inconclusive Category 4A -- Not Attaining	On the Planning List for: 1. TMDL follow-up monitoring for <i>Escherichia coli</i> exceedances (269 of 3408). 2. Missing core parameters: total fluoride, total boron, dissolved metals (copper, cadmium, and zinc), and total metals (mercury, arsenic, chromium, lead, manganese, and copper). 3. Swimming closures every summer due to high bacteria counts.		<i>Escherichia coli</i> TMDL was approved by EPA in 1999. Placed on the Planning List in 2002 for TMDL follow-up monitoring. Currently initiating monitoring in support of a Phase II TMDL. Slide Rock has had intermittent swimming closures due to high bacteria counts every summer during this 5-year assessment period (1998-2002). This may also be evidence of narrative standards violations.
Oak Creek Below Slide Rock State Park - Dry Creek 20 miles AZ15060202-018C Unique Water (Reach was split into coldwater and warmwater segments since the last assessment. No current data in 018A.)	A&Ww Attaining FC Attaining FBC Attaining DWS Attaining Agl Attaining Agl Attaining Category 1 -- Attaining All Uses		Delist turbidity. Reach is now attaining its uses based on the former standard. Designated uses changed from A&Wc to A&Ww because the reach is below 5000-foot elevation; therefore the former turbidity standard was raised from 10 to 50 NTU. New and older turbidity data do not exceed 50 NTU.	
Oak Creek Dry Creek - Spring Creek 10 miles AZ15060202-017 Unique Water	A&Ww Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive Category 3 -- Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 2 samples). Remove turbidity from the Planning List. Designated uses changed from A&Wc to A&Ww because the reach is below 5000-foot elevation, raising the former turbidity standard from 10 to 50 NTU. New and older data do not exceed the 50 NTU.		
Oak Creek Spring Creek - Verde River 13 miles AZ15060202-016 Unique Water	A&Ww Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive Category 3 -- Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 2 samples). Remove turbidity from the Planning List. Designated uses changed from A&Wc to A&Ww because the reach is below 5000-foot elevation, raising the former turbidity standard from 10 to 50 NTU. New and older data do not exceed the 50 NTU.		
Oak Creek, West Fork headwaters - Oak Creek 16 miles AZ15060202-020 Unique Water	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 -- Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Pine Creek headwaters - unnamed tributary at 34 21 51 / 111 2646 8 miles AZ15060203-049A (Reach was split into coldwater and warmwater segments since the last assessment.)	A&Wc Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive Category 3 -- Inconclusive	On the Planning List (no current monitoring data). Added in 2002 due to insufficient monitoring data.		

TABLE 24. VERDE WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Pine Creek unnamed tributary at 34 21 51 / 111 26 46 - East Verde River 12 miles AZ15060203-049B (Reach was split into coldwater and warmwater segments since the last assessment.)	A&Ww Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List (no current monitoring data). Added in 2002 due to insufficient monitoring data.		
Pumphouse Wash headwaters - Oak Creek 8 miles AZ15060202-442	A&Wc Inconclusive FC Inconclusive FBC Attaining Category 2 — Attaining Some Uses	On the Planning List due to missing core parameters: total mercury and dissolved metals (copper, cadmium, and zinc).		
Roundtree Canyon Creek headwaters - Tangle Creek 11 miles AZ15060203-853 (previously listed as Roundtree Creek)	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Spring Creek Coffee Creek - Oak Creek 7 miles AZ15060202-022	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 3 — Inconclusive (not assessed)	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Sycamore Creek Cedar Creek - Verde River 6 miles AZ15060202-026	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample). Added in 2002 due to missing core parameter.		
Sycamore Creek headwaters - Verde River 13 miles AZ15060203-055	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Verde River Granite Creek - Hell Canyon 16 miles AZ15060202-052	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Verde River Hell Canyon - unnamed reach 15060202-065 6 miles AZ15060202-038	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		

TABLE 24. VERDE WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Verde River unnamed reach 15060202-065 - Railroad Draw 11 miles AZ15060202-037	A&Ww Attaining FC Attaining FBC Attaining Agl Attaining AgL Attaining Category 1 — Attaining All Uses	Remove turbidity from the Planning List. Current turbidity data indicate designated uses are being attained (3 exceedances in 17 samples).		Turbidity TMDL approved by EPA in 2002. Added to the Planning List in 2002 for TMDL follow-up monitoring.
Verde River Sycamore Creek - Oak Creek 25 miles AZ15060202-025	A&Ww Inconclusive FC Attaining FBC Inconclusive Agl Attaining AgL Attaining Category 2 — Attaining Some Uses	On the Planning List due to: 1. Chronic mercury exceedance (1 of 1 sampling event). 2. <u>Escherichia coli</u> exceedance (1 of 25 sampling events, occurred in 2000). Remove turbidity from the Planning List. Current turbidity data indicate designated uses are being attained (3 exceedances in 17 samples).		Turbidity TMDL approved by EPA in 2002. Added to the Planning List in 2002 for TMDL follow-up monitoring.
Verde River Oak Creek - Beaver Creek 13 miles AZ15060202-015	A&Ww Not attaining FC Inconclusive FBC Inconclusive Agl Inconclusive AgL Inconclusive Category 4A — Not attaining	On the Planning List due to: 1. Insufficient monitoring data to assess (only 2 monitoring events). 2. <u>Turbidity</u> TMDL follow-up monitoring.		Turbidity TMDL approved by EPA in 2002. Added to the Planning List in 2002 for TMDL follow-up monitoring.
Verde River Beaver Creek - HUC boundary 15060203 0.5 miles AZ15060202-001	A&Ww Not attaining FC Inconclusive FBC Inconclusive Agl Inconclusive AgL Inconclusive Category 4A — Not attaining	On the Planning List for: 1. Insufficient monitoring data (no current monitoring data). 2. Added in 2002 for <u>turbidity</u> TMDL follow-up monitoring.		Turbidity TMDL approved by EPA in 2002. Added to the Planning List in 2002 for TMDL follow-up monitoring.
Verde River HUC boundary 15060203 - West Clear Creek 6 miles AZ15060203-027	A&Ww Inconclusive FC Attaining FBC Inconclusive Agl Attaining AgL Attaining Category 2 — Attaining Some Uses	On the Planning List due to: 1. <u>Escherichia coli</u> exceedance in 1 of 5 sampling events. Exceedance occurred in 1998, do not have 3 years of sampling after. 2. <u>Missing core parameters</u> : dissolved metals (copper, cadmium, and zinc).		Turbidity TMDL approved by EPA in 2002. Not added to the Planning List in 2002 because turbidity was attaining uses (no exceedances in 6 samples).
Verde River West Clear Creek - Fossil Creek 24 miles AZ15060203-025	A&Ww Not attaining FC Attaining FBC Attaining Agl Attaining AgL Attaining Category 4A — Not attaining	On the Planning List for: 1. TMDL follow-up monitoring for <u>turbidity</u> exceedances (6 of 17 samples). 2. <u>Chronic selenium</u> exceedance (1 of 1 sampling event).		Turbidity TMDL for adjacent reaches (AZ15060202-037 through AZ15060202-027) approved by EPA in 2002. Turbidity loadings for this reach are expected to be addressed through implementation of the TMDL. Therefore, assessed as "not attaining" and added to the Planning List for TMDL follow-up monitoring.
Verde River Tangle Creek - Ister Flat 4 miles AZ15060203-018	A&Ww Inconclusive FC Attaining FBC Inconclusive Agl Attaining AgL Attaining Category 2 - Attaining Some Uses	On the Planning List due to: 1. Former turbidity standard exceedances (5 of 24 samples). Monitoring will be scheduled to determine whether bottom deposit violations are occurring. 2. <u>Escherichia coli</u> exceedance (in 2000).		
Verde River Horseshoe Dam - Alder Creek 11 miles AZ15060203-008	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive AgL Attaining Category 2 — Attaining Some Uses	On the Planning List due to <u>missing core parameters</u> : <u>Escherichia coli</u> , total boron, dissolved metals (copper, cadmium, and zinc), and total mercury.		

TABLE 24. VERDE WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Verde River Bartlett Dam - Camp Creek 7 miles AZ15060203-004	A&Ww Impaired FC Attaining FBC Attaining DWS Attaining Agl Attaining Agl Attaining Category 5 — Impaired		Add copper to the 2004 303(d) List due to exceedances of chronic copper standards in 4 of 80 sampling events. Add selenium to the 2004 303(d) List due to exceedances in 4 of 23 sampling events.	
Verde River Camp Creek - Sycamore Creek 12 miles AZ15060203-003	A&Ww Inconclusive FC Inconclusive FBC Attaining DWS Inconclusive Agl Inconclusive Agl Inconclusive Category 2 — Attaining Some Uses	On the Planning List due to missing core parameters: dissolved cadmium and total metals (mercury, arsenic, chromium, lead, manganese, and copper).		
Verde River Sycamore Creek - Salt River 7 miles AZ15060203-001	A&Ww Inconclusive FC Inconclusive FBC Inconclusive DWS Inconclusive Agl Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring events for core parameters (although 3 sampling events, there were only one or two samples for each of the core parameters).		
Webber Creek headwaters - East Verde River 14 miles AZ15060203-058	A&Wc Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List (no current monitoring data). Added in 2002 due to insufficient monitoring data.		
West Clear Creek Meadow Canyon - Verde River 65 miles AZ15060203-026B (Reach was split into coldwater and warmwater segments since the last assessment. No current data in 026A.)	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List due to missing core parameters: total boron, <i>Escherichia coli</i> , dissolved zinc, and total metals (mercury, manganese, copper, and lead).		
Wet Beaver Creek Long Canyon - Rarick Canyon 7 miles AZ15060202-004	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List due to missing core parameters: total boron, <i>Escherichia coli</i> , dissolved metals (copper and zinc), and total metals (mercury, manganese, copper, and lead).		
Wet Beaver Creek Rarick Canyon - Dry Beaver Creek 7 miles AZ15060202-003	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 3 — Inconclusive	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Wet Bottom Creek headwaters - Verde River 20 miles AZ15060203-020	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Category 3 — Inconclusive	On the Planning List. No current monitoring data. Added in 2002 due to insufficient monitoring data.		

TABLE 24. VERDE WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
VERDE WATERSHED — LAKE ASSESSMENTS				
Bartlett Lake 2375 acres AZL15060203-0110	A&Ww Inconclusive FC Attaining FBC Inconclusive DWS Attaining Agl Attaining Agl Attaining Category 2 — Attaining Some Uses Trophic status — Mesotrophic - Hypereutrophic	On the Planning List due to missing core parameters: <i>Escherichia coli</i> and dissolved metals (copper, cadmium, and zinc).		
Fountain Lake 25 acres AZL15060203-0003	A&Ww Inconclusive FBC Inconclusive FC Inconclusive Category 3 — Inconclusive Trophic status not calculated	On the Planning List due to insufficient monitoring data to assess (only 1 sample).		
Granite Basin Lake 7 acres AZL15060202-0580	A&Ww Inconclusive FC Attaining FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 2 — Attaining Some Uses Trophic status — Eutrophic	On the Planning List due to: 1. High pH (2 of 6 samples). 2. Chronic ammonia exceedance (1 of 6 sampling events). 3. Missing core parameters: <i>Escherichia coli</i> and dissolved metals (copper, cadmium, and zinc).	Delet dissolved oxygen. BPA placed this lake on the 2002 303(d) List due to 3 violations in 7 samples. Violations have since been determined to be natural due to lake turnover.	
Green Valley Lake 13 acres AZL15060203-0015	A&Ww Inconclusive FC Inconclusive PBC Inconclusive Category 3 — Inconclusive Trophic status not calculated	On the Planning List (no current monitoring data). Added in 2002 due to insufficient monitoring data.		
Horseshoe Reservoir 2000 acres AZL15060203-0620	A&Ww Inconclusive FC Inconclusive FBC Inconclusive Agl Inconclusive Agl Inconclusive Category 3 — Inconclusive Trophic status not calculated	On the Planning List due to: 1. Former turbidity standard exceedances (4 of 18 samples). Further investigation into the causes and sources of turbidity will be scheduled during the next monitoring cycle for this watershed. 2. Missing core parameters: total boron, <i>Escherichia coli</i> , dissolved metals (copper, cadmium, and zinc), and total metals (mercury, manganese, copper, and lead).		
J.D. Dam Lake 29 acres AZL15060202-0700	A&Wc Inconclusive FC Attaining FBC Inconclusive Agl Attaining Agl Attaining Category 2 — Attaining Some Uses Trophic status — Eutrophic	On the Planning List due to: 1. Low pH (1 of 5 samples). 2. Missing core parameters: <i>Escherichia coli</i> and dissolved metals (copper and cadmium).		
Pecks Lake 95 acres AZL15060202-1060	A&Wc Not attaining FC Attaining FBC Inconclusive Agl Attaining Agl Attaining Category 4A — Not attaining Trophic status — Eutrophic	On the Planning List due to: 1. TMDL follow-up monitoring for low dissolved oxygen (2 of 7 samples). 2. Missing core parameters: <i>Escherichia coli</i> , turbidity, and dissolved metals (cadmium, copper, and zinc).		Nutrient TMDL to address high pH and low dissolved oxygen problems was approved by EPA in 2000. Placed on the Planning List in 2002 for TMDL follow-up monitoring.

TABLE 24. VERDE WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Perkins Tank 4 acres AZL15060202-1080	A&Wc Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive Category 3 – Inconclusive Trophic status not calculated	On the Planning List due to: 1. Insufficient monitoring data to assess (only 2 samples). 2. Low <u>dissolved oxygen</u> (2 of 2 samples). 3. Former <u>turbidity</u> standard exceedance (1 of 1 sample). Further investigation into the causes and sources of turbidity will be scheduled during the next monitoring cycle for this watershed.		
Scholze Lake 22 acres AZL15060202-1350	A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive Category 3 – Inconclusive Trophic status not calculated	On the Planning List due to: 1. Low <u>dissolved oxygen</u> (1 of 3 samples). 2. <u>Chronic lead</u> exceedance (1 of 1 sampling event). 3. <u>Total nitrogen</u> exceedance (2 of 4 samples). 4. Former <u>turbidity</u> standard exceedance (1 of 3 samples). Further investigation into the causes and sources of turbidity will be scheduled during the next monitoring cycle for this watershed. 5. <u>Missing core parameters</u> : <i>Escherichia coli</i> , dissolved metals (copper and cadmium), and total metals (mercury, copper, and lead).		
Stehr Lake 20 acres AZL15060203-1480	A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive Category 3 – Inconclusive Trophic status – Mesotrophic	On the Planning List (no current monitoring data). Added in 2002 due to missing core parameter.		
Stonemin Lake 125 acres AZL15060202-1490	A&Wc Not attaining FC Attaining FBC Not attaining AgL Not attaining AgL Not attaining Category 4A – Not Attaining Trophic status – Mesotrophic	On the Planning List for: 1. TMDL follow up monitoring for <u>high pH</u> (6 of 10 samples). 2. <u>Arsenic</u> exceedance (2 of 8 samples). 4. <u>Missing core parameter</u> : <i>Escherichia coli</i> .		Nutrient TMDL to address low <u>dissolved oxygen</u> and <u>high pH</u> was approved by EPA in 2000. Placed on the Planning List in 2002 for TMDL follow-up monitoring. Note that the lake has been totally or near dry for the last two years due to drought conditions.
Sullivan Lake 14 acres AZL15060202-3370	A&Ww Inconclusive FC Inconclusive FBC Inconclusive AgL Inconclusive AgL Inconclusive Category 3 – Inconclusive Trophic status not calculated	On the Planning List (no current monitoring data). Added in 2002 due to <u>high pH</u> (1 of 3 samples) and missing core parameters.		
Watson Lake 152 acres AZL15060202-1590	A&Ww Impaired FC Inconclusive FBC Impaired AgL Impaired AgL Impaired Category 5 – Impaired Trophic status – Eutrophic	On the Planning List due to: 1. Fish kill in 2000. 2. <u>Missing core parameters</u> : total boron, <i>Escherichia coli</i> , turbidity, dissolved metals (copper and cadmium), and total metals (mercury, copper, lead, and zinc).	Nitrogen, dissolved oxygen and pH added to the 2004 303(d) List by EPA.	Fish kill in 2000 associated with a blue-green algae and high pH (9.5 - 9.8). This algae can produce a toxin that can kill fish and is associated with lakes with high pH and elevated nutrients. This fish kill may be evidence of a narrative nutrient standard violation.

TABLE 24. VERDE WATERSHED — ASSESSMENT, PLANNING LIST, AND 303(d) STATUS TABLE

SURFACE WATER DESCRIPTION	2004 ASSESSMENT 5-CATEGORIES LAKE TROPHIC STATUS	2004 PLANNING LIST	STATUS OF 2002 303(d) LIST RECOMMENDATIONS FOR 2004 LIST	OTHER INFORMATION
Whitehorse Lake 41 acres AZL15060202-1630	A&Wc Impaired FC Inconclusive FBC Inconclusive DWS Attaining Agl Attaining Agl Attaining Category 5 — Impaired Trophic status — Eutrophic	On the Planning List due to: 1. Chronic ammonia exceedance in 2 of 13 samples events (15% exceed). 2. Former turbidity standard exceedances (9 of 9 samples). Further investigation into the causes and sources of turbidity will be scheduled during the next monitoring cycle for this watershed. 3. Fish kill in 1999. 4. Missing core parameters: <i>Escherichia coli</i> , dissolved metals (copper, cadmium, and zinc).	EPA placed this lake on the 2002 303(d) List for low dissolved oxygen based on 5 of 11 exceedances. Arizona's Impaired Water Identification Rule requires a minimum of 20 samples to base a listing decision for dissolved oxygen. However, once listed the lake cannot be delisted until a TMDL is complete or dissolved oxygen data indicate designated uses are being attained. Current data show low dissolved oxygen in 4 of 14 samples.	Fish kill in 1999 related to algal bloom and low dissolved oxygen which may be evidence of a narrative standard violation.

IV. Surface Water Monitoring and Assessment Information: How Clean is My Stream or Lake?

How are assessments organized?

Arizona's 2004 assessments are presented by watershed in this chapter. For each watershed, the following information is provided:

- A watershed map illustrating monitoring sites and final assessments
- Surface water quality monitoring tables
- Assessment tables

Surface Water Monitoring Tables – The information in the surface water monitoring tables may be the most valuable information in this report. The monitoring tables summarize the water quality data used and provide the final assessment of individual surface waters. The agency or organization doing the monitoring, number of samples, years sampled, and constituents exceeding standards are shown in these tables. These tables are the basis for 303(d) listing and/or delisting decisions. The information contained within is also used by many federal and state programs that permit activities that may add further discharges to these surface waters. These tables provide the most comprehensive list of monitoring activities in Arizona.

The tables are organized by site (sampling location), indicating what, if any, exceedances were found. The summary rows, indicated by gray shading, combine all of the monitoring data from all of the sites in a particular stream reach or lake, and indicate the assessment for each designated use.

Assessment Tables - These comprehensive tables bridge current assessments with past assessments and impaired waters identification. The assessment tables provide the following information:

- Assessments for each designated use: "attaining," "inconclusive," "not attaining," or "impaired" (see criteria in Chapter III)
- Which surface waters will be on the 2004 303(d) List submitted to EPA and the pollutants of concern
- Which surface waters will be added to the Planning List and the pollutants of concern or reason for this action
- Which pollutants and surface waters should be removed from the 2002 303(d) List and the reasons for this action
- Which TMDLs are ongoing or completed

As requested in EPA's *Guidance for 2004 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act*, ADEQ's assessment tables place waters into one of the following five categories:

Category 1	All designated uses are met
Category 2	Some of the designated uses are attaining but insufficient data to determine if remaining designated uses are attaining or impaired (also includes threatened waters)
Category 3	Insufficient data to determine whether any designated uses are attaining their uses
Category 4	Water is impaired but a TMDL is not needed
Category 5	Water is impaired and a TMDL is needed (on the 2004 303(d) List)

Chapter V lists the assessed surface waters by these categories. Those waters on the 303(d) List (Category 5) are then prioritized for TMDL development.

How is a surface water added to or removed from the 303(d) List?

Listing and Delisting Criteria - The criteria for listing or delisting a surface water are established in the Impaired Water Identification Rule (**Appendix B**). In general, the same amount and type of data used to place a surface water on the 303(d) List is needed to remove it from the list. For example, if two bacterial exceedances in a 3-year period put it on the list, then no exceedances in a 3-year period could remove it from the list (one exceedance would be inconclusive). However, the data must be collected during similar hydrologic or climatic conditions (i.e., critical conditions) that occurred when samples were taken that indicated impairment, if those conditions still exist. All data must meet the credible data requirements.

When a water is assessed as "impaired," it is added to the 303(d) List. As noted in Chapter III, a designated use is impaired if any of the following occur:

- A. For most standards (except situations in B, C, and D below),
 1. 20 or more samples with the minimum number of exceedances listed in Table 2 (the 303(d) List) in the Impaired Water Identification Rule, and

2. Collected during three or more temporally independent sampling events.

B. For acute Aquatic and Wildlife acute standards, the nitrate and nitrite/nitrate standard, and single sample maximum bacteria standards:

1. More than one exceedance during temporally independent sampling events within a 3-year period, and

2. Fewer than three years of samples since last exceedance.

C. For Aquatic and Wildlife chronic standards, more than one exceedance during temporally independent sampling events.

D. For an annual mean (nutrients), 90th percentile (nutrients), or geometric mean (*Escherichia coli* or SSC), more than one exceedance within the assessment period.

The criteria for removing a surface water from the 303(d) List can be summarized as follows:

- There are sufficient credible data to determine that the surface water is assessed as “attaining” its designated uses based on numeric and/or narrative criteria for the pollutant of concern (see criteria in Chapter III).
- A TMDL has been completed.
- An EPA approved change in the applicable surface water quality standard or designated use results in the surface water meeting standards.
- Neither the older data nor the current data is sufficient to meet the new impaired waters identification criteria. For example, there was an insufficient number of samples, sampling events, or exceedances.
- Investigations reveal that impairment is not due to a pollutant or surface water quality characteristic but rather due to “pollution” or other situation that cannot be readily addressed through a TMDL (e.g., hydrologic modifications).
- Investigations reveal that pollutant loadings from naturally occurring conditions alone are sufficient to cause a violation of applicable water quality standards.
- Reach is split and no current or historic data exist in one portion of the list that would support a listing.

A list of surface waters and pollutants being removed from the 2002 303(d) List is presented in Chapter V. In many cases, a surface water is simply moved from the 303(d) List to the Planning List for further monitoring or other action unless all designated uses are assessed as “attaining.”

EPA Additions to the 303(d) List – In the tables in this chapter, a notation indicates which surface waters were added to the 2002 and 2004 303(d) Lists by

EPA. This “overfiling” occurred because EPA is not bound by Arizona’s Impaired Water Identification Rule nor Arizona’s TMDL Statute (Appendix B), and has retained the authority through federal regulation (CFR 130.7(d)) to revise states’ 303(d) lists. In 2002, EPA added 19 additional surface waters to the 303(d) List and added three additional pollutants to surface waters already listed. In 2004, EPA has added 19 surface waters, as well as eight additional pollutant on waters already listed. The Agency identified the following situations where waters should have been listed according to federal guidelines, but were not on the Section 303(d) List submitted by Arizona:

- A fish consumption advisory has been issued based on pollutant concentrations in fish tissues collected in Arizona. EPA finds this to be evidence of narrative standards violations.
- Available data indicate that surface waters “substantially” exceed the state’s water quality standards for specific pollutants. EPA concluded that the state’s decision to not list waters with fewer than 20 samples was inconsistent with federal listing requirements if there were sufficient exceedances to support a reliable conclusion that standards are not being attained. Specifically this occurred:
 - If there were 3 or more exceedances and ten or fewer samples collected, or
 - If there were 5 or more exceedances and fewer than 20 samples collected.
- Exceedances of the repealed turbidity standard provide evidence of non-attainment of the narrative standard for excessive bottom deposits.

Note that all waters placed on the 2002 303(d) List by EPA remained on the list and are indicated as “impaired.” These waters will be delisted when they meet requirements established in Arizona’s Impaired Water Identification Rule for delisting (e.g., TMDL complete, changes in standards, sufficient new data indicate that designated uses are being attained).

To make Arizona’s and EPA’s assessment and listing criteria more compatible, ADEQ is currently developing narrative implementation procedures that will provide the basis for Arizona to make a 303(d) listing due to narrative water quality standards violations. ADEQ has also proposed several other changes to the Impaired Water Identification Rule and Surface Water Quality Standards to facilitate assessments.

How is a surface water added to or removed from the Planning List?

Surface waters with any designated uses assessed as “inconclusive” or “not attaining” are placed on the Planning List for further monitoring. The Impaired Water Identification Rule (R18-11-605.C) provides a list of specific criteria for why a surface water must be placed on the Planning List, such as:

- Exceedances of standards
- Data available does not meet credible data requirements
- Indications of narrative water quality standard violations, but no narrative implementation procedures established as required
- A TMDL has been completed

However, ADEQ has added other “inconclusive” waters to its internal Planning List. These waters need additional monitoring due to one of the following reasons:

- Insufficient core parameter coverage
- Insufficient monitoring events

Planning List delisting criteria -- Criteria for removing a surface water or pollutant from the Planning List are also established in the Impaired Water Identification Rule (R18-11-605.E). A surface water is removed from the Planning List based on one of the following criteria:

- The surface water is assessed as impaired and added to the 303(d) List.
- There are sufficient data to determine that the surface water is “attaining” all of its designated uses.

Actually, a surface water may be on both the Planning and 303(d) Lists due to different parameters of concern. As stated above, the only way to be removed from both the Planning List and the 303(d) List is to be assessed as “attaining all uses.”



The West Fork of the Little Colorado River, near Greer, Arizona, is on ADEQ's Planning List due to missing core parameters. Core parameters are a set of water quality parameters that ADEQ has deemed necessary to make a full assessment of a stream or lake.

Overview of Assessment Terms and Criteria

Criteria for assessing designated uses and surface waters are provided in Chapter III, along with definitions for designated uses and the "core parametric coverage." These definitions and criteria are complex, so information in Chapter III should be reviewed before looking at tables in this chapter. However, to facilitate review of the assessment tables, summary definitions of some assessment terms are provided below:

Assessing Each Designated Use	Combined Assessment of Uses
<p>Each designated use is assessed as follows:</p> <p>Attaining – All surface water quality standards are being met based on a minimum of 3 monitoring events that provide seasonal representation and core parametric coverage. Threatened waters are a subset of "attaining," where a surface water quality standard is currently being met, but a trend analysis indicates that the surface water is likely to be impaired before the next assessment.</p> <p>Impaired – A surface water quality standard is not being met based on criteria identified in the Impaired Waters Identification Rule (Appendix B).</p> <p>Not Attaining – A designated use would be assessed as "impaired" except that a TMDL does not need to be completed for one of the following reasons:</p> <p>A. A TMDL has already been completed and approved by EPA but the surface water is not yet attaining uses.</p> <p>B. Other pollution control requirements are reasonably expected to result in the attainment of water quality standards by the next regularly scheduled listing cycle.</p> <p>C. The impairment is not related to a "pollutant" loading, but is caused by "pollution" (e.g. hydrologic modification).</p> <p>Inconclusive – Monitoring or other assessment information available is insufficient to assess the surface water as "attaining," "threatened," "impaired," or "not attaining."</p>	<p>The individual designated use assessments are combined to provide an assessment of the surface water and each surface water is placed on <u>one</u> of the following five assessment lists:</p> <p>Attaining All Uses – all designated uses are assessed as "attaining" (Category 1).</p> <p>Attaining Some Uses – at least one designated use is assessed as "attaining" and others are assessed as "inconclusive" or "threatened" (Category 2).</p> <p>Inconclusive – All designated uses are assessed as "inconclusive" (Category 3). (Note that all surface waters that were not assessed due to insufficient credible data are by default assessed as being in Category 3.)</p> <p>Not Attaining – One or more designated use is assessed as "not attaining" and none are assessed as "impaired" (Category 4).</p> <p>Impaired – One or more designated use is assessed as "impaired" (Category 5).</p>

Designated Uses	Core Parametric Coverage
<p>Designated uses are specified for stream segments and lakes in the surface water rules (A.A.C. R18-11-104 and 105). Arizona's surface water designated uses include:</p> <p>Aquatic and Wildlife Coldwater Fishery (A&Wc) Warmwater Fishery (A&Ww) Ephemeral Stream (A&We) Effluent Dependent Water (A&Wedw)</p> <p>Full Body Contact (FBC) (i.e., swimming)</p> <p>Partial Body Contact (PBC) (i.e., non-swimming recreation)</p> <p>Fish Consumption (FC)</p> <p>Domestic Water Source (DWS)</p> <p>Agricultural Irrigation (Agl)</p> <p>Agricultural Livestock Watering (Agl)</p>	<p>Required to Assess a Designated Use as "Attaining" Uses:</p> <p>Aquatic and Wildlife – Dissolved oxygen, flow (if a stream) and depth (if a lake), hardness, pH, turbidity/suspended sediment concentration, total nitrogen and total phosphorus, dissolved metals (cadmium, copper, and zinc)</p> <p>Fish Consumption – Total mercury</p> <p>Full Body or Partial Body Contact – <i>Escherichia coli</i>, pH</p> <p>Domestic Water Source – Nitrate/nitrite or nitrate, pH, total fluoride, total metals (arsenic, chromium or chromium VI, and lead)</p> <p>Agriculture Irrigation – Total boron, total manganese, pH</p> <p>Agriculture Livestock Watering – Total metals (copper and lead), pH</p> <p>Notes: *Nitrogen and phosphorus are required only in surface waters with nutrient standards. *In ephemeral waters, the following parameters are not required, dissolved oxygen, turbidity/suspended sediment concentration and <i>Escherichia coli</i>. *In effluent dependent waters and all lakes, suspended sediment concentration is not required.</p>

V. 2004 303(d) List, Assessment Categories, and TMDL Schedule

While Chapter IV provides a comprehensive look at Arizona's water quality assessment, it is primarily useful for looking up information on specific waters. However, it would take a good deal of time to find in Chapter IV just how many waters are assessed as "impaired," or to find just those waters that are assessed as "attaining all uses." This chapter provides a summary of the state's water quality assessment to the public and to EPA, beginning with statewide assessment maps for streams and lakes.

The Five Category Assessment List – Surface waters assessed in 2004 are organized by Category in Tables 25 through 29.

- Category 1** Surface waters assessed as "attaining all uses." All designated uses are assessed as "attaining."
- Category 2** Surface waters assessed as "attaining some uses." Each designated use is assessed as either "attaining," "inconclusive," or "threatened."
- Category 3** Surface waters assessed as "inconclusive." All designated uses are assessed as "inconclusive" due to insufficient data to assess any designated use (e.g., insufficient samples or core parameters). By default, this category would include waters that were "not assessed" for similar reasons. (See note below.)
- Category 4** Surface waters assessed as "not attaining." At least one designated use was assessed as "not attaining" and no uses were assessed as "impaired." A Total Maximum Daily Load (TMDL) analysis will not be required at this time for one of the following reasons:
- 4 A.** A TMDL has already been completed and approved by EPA but the water quality standards are not yet attained;
 - 4 B.** Other pollution control requirements are reasonably expected to result in the attainment of water quality standards by the next regularly scheduled listing cycle; or
 - 4 C.** The impairment is not related to a "pollutant" loading but rather due to "pollution" (e.g., hydrologic modification).
- Category 5** Surface waters assessed as "impaired." At least one designated use was assessed as "impaired" by a pollutant. These waters

must be prioritized for TMDL development (Table 31 at the end of this chapter).

The five part list assists the state in identifying monitoring needs. For example, Category 1 waters will be monitored as part of the rotating watershed cycle as

Category 5 - 303(d) List

The 303(d) List identifies, by surface water segment, the pollutants or surface water characteristics not meeting surface water quality standards. The 303(d) List is a list of all impaired waters that require more than existing technology and permit controls to achieve or maintain surface water quality standards. EPA must approve this list and has the authority to add or remove surface waters from the list based on the federal Clean Water Act, regulations, or policies.

The objective is to systematically identify impaired surface waters and the pollutant(s) causing the impairment and ultimately establish a scientifically-based strategy (a TMDL) for restoring the surface water quality.

The status of TMDLs in progress or completed are highlighted in Chapter VIII. TMDL investigations have been initiated or completed on many of the surface waters on the 2002 303(d) List.

resources allow; while Category 2, 3, and 4 waters are placed on the Planning List and targeted for further monitoring over the next two watershed cycles. Category 5 waters are placed on the 303(d) List and scheduled for monitoring to support development of a TMDL.

Based on monitoring and assessments, a surface water can move from one category to another. The objective is to eventually have all surface waters attaining uses.

Note that many surface waters in Arizona could not be assessed because water quality data or information was not collected during the monitoring period covered by this assessment. By default, all of these waters would be included in Category 3. These waters are not specifically named in this report, except for those placed on the Planning List in 2002. Once placed on the Planning List, these waters remain on the Planning List and appear in Category 3 until sufficient data are collected to make a complete assessment of all uses. Most surface waters lacking monitoring data are ephemeral or only flow for a short time, making it difficult to collect sufficient water quality data. As discussed in Chapter VIII, ADEQ's Ambient Monitoring Program is attempting to monitor and assess all perennial waters.

Statewide Assessment Map for Streams

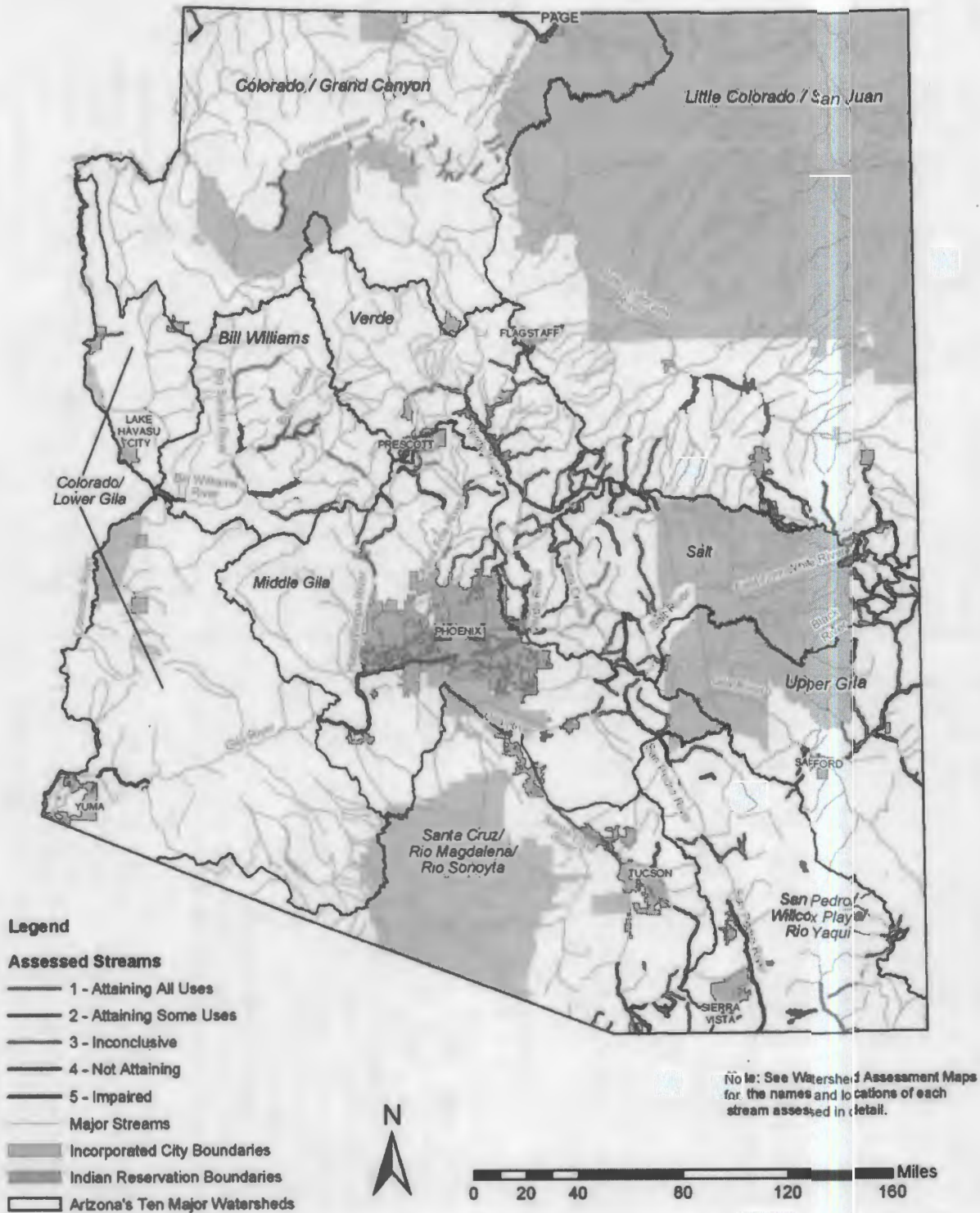


Figure 25. 2004 assessments of streams

Statewide Assessment Map for Lakes

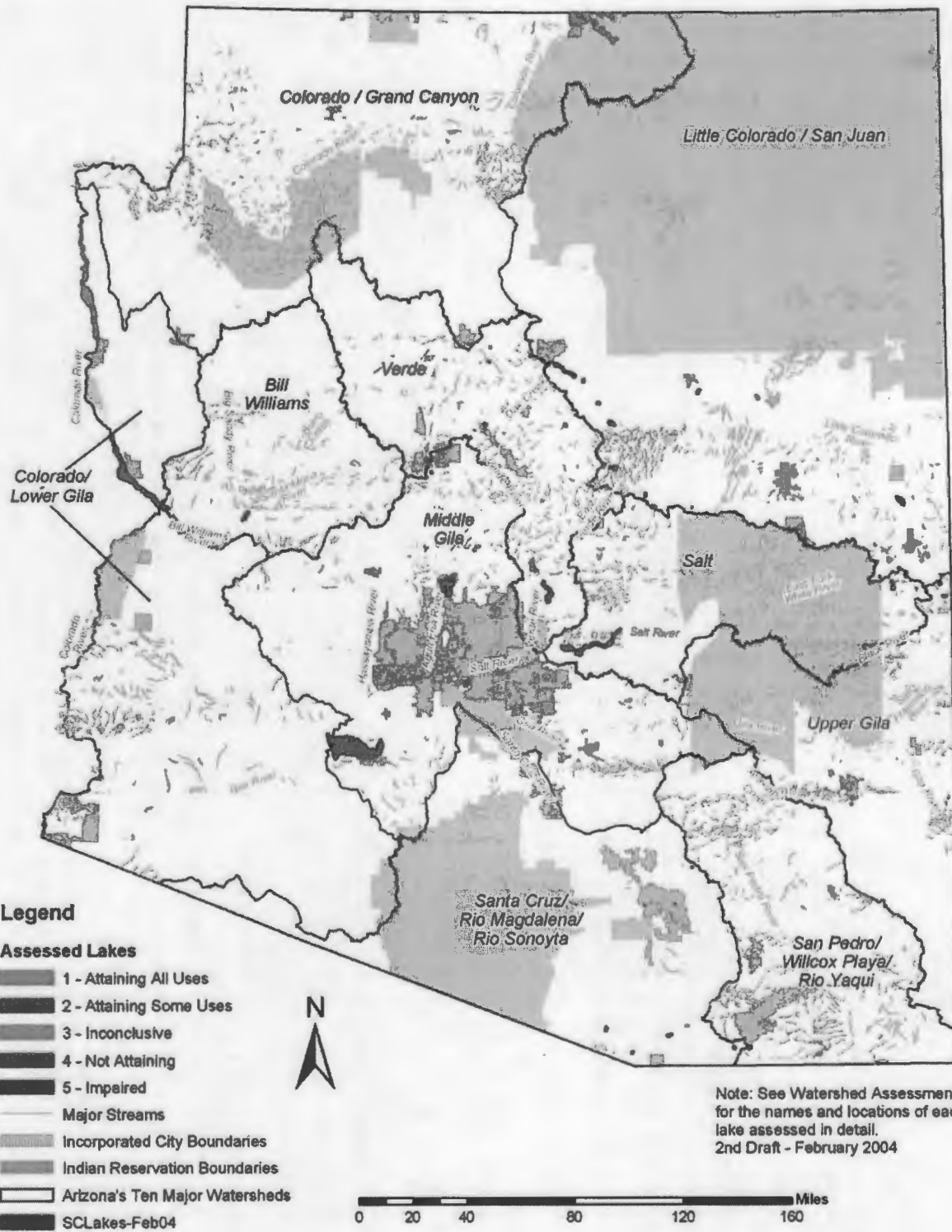


Figure 26. 2004 assessments of lakes

Assessment Categories and Planning List

**Table 25. Category 5 – Impaired Waters
2004 303(d) List**

At Least One Designated Use Assessed as "Impaired"
TMDL development is required for these waters.

Surface Water	Reach or Lake Number	On the 2004 303(d) List Pollutants or Parameters of Concern	Other Pollutants or Parameters of Concern Requiring Further Monitoring
Bill Williams Watershed			
Alamo Lake	AZL15030204-0040	Yes: Mercury in fish tissue (EPA*), pH (high), adding ammonia	Yes: Missing core parameters
Boulder Creek unnamed wash at 34 41 14 / 113 03 34 - Wilder Creek	AZ15030202-006B	Yes: Adding mercury (EPA*)	Yes: Copper, zinc, missing core parameters
Boulder Creek Wilder Creek - Copper Creek	AZ15030202-005A	Yes: Adding mercury (EPA*) (Restricted to segment from Wilder - Butte Creek)	Yes: Selenium, TMDL follow-up monitoring for arsenic, copper, zinc (Copper, zinc impairments restricted to segment from Wilder - Butte Creek)
Burro Creek Boulder Creek - Black Canyon	AZ15030202-004	Yes: Adding mercury (EPA*)	No
Coors Lake	AZL15030204-5000	Yes: Adding mercury in fish tissue (EPA*)	Yes: Insufficient monitoring
Colorado - Grand Canyon Watershed			
Colorado River Parashant Canyon - Diamond Creek	AZ15010002-003	Yes: Adding selenium, adding suspended sediment concentration	Yes: Turbidity, missing core parameters
Paria River Utah border - Colorado River	AZ14070007-123	Yes: Adding suspended sediment concentration	Yes: Turbidity, missing core parameters
Virgin River Beaver Dam Wash - Big Bend Wash	AZ15010010-003	Yes: Adding selenium, add suspended sediment concentration	Yes: Turbidity, missing core parameters
Colorado - Lower Gila Watershed			
Colorado River Hoover Dam - Lake Mohave	AZ15030101-015	Yes: Adding selenium	Yes: Missing core parameters
Gila River Coyote Wash - Fortuna Wash	AZ15070201-003	Yes: Adding boron, adding selenium	No
Painted Rock Borrow Pit Lake	AZL15070201-1010	Yes: DDT metabolites, toxaphene and chlordane in fish tissue (EPA*), dissolved oxygen	Yes: Ammonia, pH (high), missing core parameters
Little Colorado - San Juan Watershed			
Bear Canyon Lake	AZL15020008-0130	Yes: Adding pH (low) (EPA*)	Yes: Dissolved oxygen, selenium, missing core parameters

Surface Water	Reach or Lake Number	On the 2004 303(d) List Pollutants or Parameters of Concern	Other Pollutants or Parameters of Concern Requiring Further Monitoring
Lake Mary (lower)	AZL15020015-0890	Yes: Mercury in fish tissue (EPA*)	Yes: Insufficient monitoring
Lake Mary (upper)	AZL15020015-0900	Yes: Mercury in fish tissue (EPA*)	Yes: Turbidity, insufficient monitoring
15 Little Colorado River Silver Creek - Carr Wash	AZ15020002-004	Yes: Adding <i>Escherichia coli</i> Adding sediment (EPA*)	Yes: Lead
Little Colorado River Porter Tank Draw - McDonalds Wash	AZ15020008-017	Yes: Copper, silver, suspended sediment concentration	Yes: Missing core parameters
Long Lake (lower)	AZL15020008-0820	Yes: Adding mercury in fish tissue (EPA*)	Yes: Insufficient seasonal coverage, missing core parameters
Lyman Lake	AZL15020001-0850	Yes: Adding mercury in fish tissue (EPA*)	Yes: Insufficient monitoring
Soldiers Annex Lake	AZL15020008-1430	Yes: Adding mercury in fish tissue (EPA*)	Yes: Insufficient monitoring
26 Soldiers Lake	AZL15020008-1440	Yes: Adding mercury in fish tissue (EPA*)	Yes: Insufficient monitoring
Middle Gila Watershed			
Alvord Park Lake	AZL15060106B-0050	Yes: Adding ammonia	Yes: <i>Escherichia coli</i> , missing core parameters
Chaparral Lake	AZL15060106B-0300	Yes: Adding dissolved oxygen, adding <i>Escherichia coli</i>	Yes: Missing core parameters
Cortez Park Lake	AZL15060106B-0410	Yes: Adding dissolved oxygen, adding pH (high)	Yes: Fish kill (1999), missing core parameters
French Gulch headwaters - Hassayampa River	AZ15070103-239	Yes: Copper, zinc, adding cadmium	Yes: Missing core parameters
25 Gila River Salt River - Agua Fria River	AZ15070101-015	Yes: DDT metabolites, toxaphene and chlordane in fish tissue (EPA*)	No
Gila River Agua Fria River - Waterman Wash	AZ15070101-014	Yes: DDT metabolites, toxaphene and chlordane in fish tissue (EPA*)	Yes: Insufficient monitoring
Gila River Waterman Wash - Hassayampa River	AZ15070101-010	Yes: DDT metabolites, toxaphene and chlordane in fish tissue (EPA*)	Yes: Insufficient monitoring
Gila River Hassayampa River - Centennial Wash	AZ15070101-009	Yes: DDT metabolites, toxaphene and chlordane in fish tissue (EPA*)	Yes: Insufficient monitoring
Gila River Centennial Wash - Gillespie Dam	AZ15070101-008	Yes: DDT metabolites, toxaphene, and chlordane in fish tissue (EPA*), boron, adding selenium	Yes: Turbidity/suspended sediment concentration
36 Gila River Gillespie Dam - Rainbow Wash	AZ15070101-007	Yes: DDT metabolites, toxaphene and chlordane in fish tissue (EPA*)	Yes: Insufficient monitoring
Gila River Rainbow Wash - Sand Tank	AZ15070101-005	Yes: DDT metabolites, toxaphene and chlordane in fish tissue (EPA*)	Yes: Insufficient monitoring
32 Gila River Sand Tank - Painted Rocks Reservoir	AZ15070101-001	Yes: DDT metabolites, toxaphene and chlordane in fish tissue (EPA*)	Yes: Insufficient monitoring

Surface Water	Reach or Lake Number	On the 2004 303(d) List Pollutants or Parameters of Concern	Other Pollutants or Parameters of Concern Requiring Further Monitoring
Hassayampa River Buckeye Canal - Gila River	AZ15070103-001B	Yes: DDT metabolites, toxaphene and chlordane in fish tissue (EPA*)	Yes: Turbidity/suspended sediment concentration
Mineral Creek Devils Canyon - Gila River	AZ15050100-012B	Yes: Copper, adding selenium	Yes: Turbidity/suspended sediment concentration, missing core parameters
Painted Rocks Reservoir	AZL15070101-1020A	Yes: DDT metabolites, toxaphene and chlordane in fish tissue (EPA*)	Yes: Insufficient monitoring
Queen Creek headwaters - Superior Mine WWTP	AZ15050100-014A	Yes: Copper	Yes: Missing core parameters
Queen Creek Superior Mine WWTP - Potts Canyon	AZ15050100-014B	Yes: Adding copper	Yes: Selenium, missing core parameters
Salt River 23 rd Ave WWTP - Gila River	AZ15060106B-001D	Yes: DDT metabolites, toxaphene and chlordane in fish tissue (EPA*)	No
Turkey Creek unnamed tributary at 34 19 28 / 112 21 28 - Poland Creek	AZ15070102-036B	Yes: Cadmium, copper, zinc, adding lead	Yes: Arsenic, missing core parameters
Salt River Watershed			
Canyon Lake	AZL15060106A-0250	Yes: Adding dissolved oxygen	Yes: Ammonia and missing core parameters
Crescent Lake	AZL15060101-0420	Yes: pH (high, EPA*)	Yes: Total nitrogen, fish kill (in 1998), missing core parameters
Pinto Creek Ripper Spring - Roosevelt Lake	AZ15060103-018C	Yes: Adding selenium, adding copper	No
Salt River Stewart Mountain Dam - Verde River	AZ15060106A-003	Yes: Adding dissolved oxygen, adding copper	Yes: <i>Escherichia coli</i>
Tonto Creek headwaters - unnamed tributary at 34 18 10 / 111 04 14	AZ15060105-013A	Yes: Adding dissolved oxygen, nitrogen (EPA*)	Yes: Turbidity/suspended sediment concentration, <i>Escherichia coli</i>
Tonto Creek unnamed tributary at 34 18 10 / 111 04 14 - Haigler Creek	AZ15060105-013B	Yes: Adding nitrogen (EPA*)	Yes: Turbidity/suspended sediment concentration, <i>Escherichia coli</i>
San Pedro - Willcox Playa - Rio Yaqui Watershed			
Brewery Gulch Wildcat Canyon - Mule Gulch	AZ15080301-337	Yes: Adding copper (EPA*)	Yes: pH
Mule Gulch headwaters - above Lavender Pit	AZ15080301-090A	Yes: Copper	Yes: Missing core parameters.
Mule Gulch above Lavender Pit - Bisbee WWTP	AZ15080301-090B	Yes: Copper, pH (low, EPA*)	Yes: Lead, missing core parameters

Surface Water	Reach or Lake Number	On the 2004 303(d) List Pollutants or Parameters of Concern	Other Pollutants or Parameters of Concern Requiring Further Monitoring
Mule Gulch Bisbee WWTP - Highway 80 Bridge	AZ15080301-090C	Yes: Copper, zinc, pH (low), adding cadmium	Yes: Lead, missing core parameters
San Pedro River Mexico border - Charleston	AZ15050202-008	Yes: Copper	Yes: Selenium
San Pedro River Babocomari Creek - Dagoon Wash	AZ15050202-003	Yes: Adding <i>Escherichia coli</i>	No
San Pedro River Dagoon Wash - Tres Alamos Wash	AZ15050202-002	Yes: Nitrate	Yes: Fecal coliform/ <i>Escherichia coli</i> , suspended sediment concentration /turbidity, missing core parameters
San Pedro River Aravaipa Creek - Gila River	AZ15050203-001	Yes: Adding <i>Escherichia coli</i> , adding selenium	Yes: Mercury
Santa Cruz - Rio Magdalena - Rio Sonoyta			
Lakeside Lake	AZL15050302-0760	Yes: Adding dissolved oxygen, adding ammonia Adding nitrogen, phosphorus, chlorophyll (EPA*)	Yes: Turbidity, missing core parameters
Nogales and East Nogales washes Mexico border - Potrero Creek	AZ15050301-011	Yes: Chlorine, adding <i>Escherichia coli</i> , adding ammonia, adding copper	Yes: Turbidity/suspended sediment concentration
Parker Canyon Lake	AZL15050301-1040	Yes: Adding mercury in fish tissue (EPA*)	Yes: Missing core parameters
Rose Canyon Lake	AZL15050302-1260	Yes: Adding pH (high and low) (EPA*)	Yes: Turbidity, missing core parameters
Santa Cruz River Mexico border - Nogales WWTP	AZ15050301-010	Yes: <i>Escherichia coli</i>	No
Sonoita Creek 750 feet below WWTP - Santa Cruz River	AZ15050301-013C	Yes: Adding zinc	Yes: Copper, dissolved oxygen
Upper Gila Watershed			
Cave Creek headwaters - South Fork of Cave Creek	AZ15040006-852A	Yes: Adding selenium	No
Gila River Skully Creek - San Francisco River	AZ15040002-001	Yes: Adding selenium	Yes: Dissolved oxygen, lead
Gila River Bonita Creek - Yuma Wash	AZ15040005-022	Yes: Adding <i>Escherichia coli</i> Adding sediment (EPA*)	Yes: Copper, lead
San Francisco River headwaters - New Mexico border	AZ15040004-023	Yes: Adding sediment (EPA*)	No
Verde Watershed			
East Verde River Ellison Creek - American Gulch	AZ15060203-022B	Yes: Adding selenium	No
Granite Creek headwaters - Willow Creek	AZ15060202-059A	Yes: Adding dissolved oxygen (EPA*)	Yes: <i>Escherichia coli</i> , mercury, turbidity/suspended sediment concentration, missing core parameters

Surface Water	Reach or Lake Number	On the 2004 303(d) List Pollutants or Parameters of Concern	Other Pollutants or Parameters of Concern Requiring Further Monitoring
Verde River Bartlett Dam - Camp Creek	AZ15060203-004	Yes: Adding selenium, copper	No
Watson Lake	AZL15060202-1590	Yes: Adding dissolved oxygen, pH (high), nitrogen (EPA*)	Yes: Fish kill, missing core parameters
Whitehorse Lake	AZL15060202-1630	Yes: Dissolved oxygen (EPA*)	Yes: Ammonia, turbidity, fish kill in 1999, missing core parameters

* Indicates that EPA placed the pollutant or parameter on the 2002 or 2004 303(d) List, rather than ADEQ.

Table 26. Category 4 – Not Attaining (Impaired) Waters

At Least One Designated Use Assessed as “Not Attaining”
All Waters are On the Planning List for Follow Up Monitoring

4A = A TMDL has been approved by EPA but designated uses are not yet “attaining.”

4B = Other pollution control requirements are expected to result in the attainment of water quality standards by the next regularly scheduled listing cycle (2 years currently).

4C = The impairment is not related to a “pollutant” loading, but caused by pollution (e.g., hydrologic modifications).

Surface Water	Reach or Lake Number	On the 2004 Planning List Pollutants or Parameters of Concern
Bill Williams Watershed (no Category 4 waters)		
Colorado - Grand Canyon Watershed (no Category 4 waters)		
Colorado - Lower Gila Watershed (no Category 4 waters)		
Little Colorado - San Juan Watershed		
1 Little Colorado River West Fork of the Little Colorado River - Water Canyon Creek	AZ15020001-011	Yes 4A: Turbidity/suspended sediment concentration (turbidity TMDL approved for adjacent reaches in 2002) Other: Missing core parameters
2 Little Colorado River Water Canyon Creek - Nutrioso Creek	AZ15020001-010	Yes 4A: Turbidity/suspended sediment concentration (turbidity TMDL approved in 2002) Other: Insufficient monitoring
3 Little Colorado River Nutrioso Creek - Camero Wash	AZ15020001-009	Yes 4A: Turbidity/suspended sediment concentration (turbidity TMDL approved in 2002) Other: <i>Escherichia coli</i>
4 Little Colorado River unnamed reach (15020001-021) to Lyman Lake	AZ15020001-005	Yes 4A: Turbidity/suspended sediment concentration (turbidity TMDL approved for adjacent reaches in 2002) Other: <i>Escherichia coli</i>
5 Nutrioso Creek headwaters - Picnic Creek	AZ15020001-017	Yes 4A: Turbidity/suspended sediment concentration (turbidity TMDL approved in 2000)
6 Nutrioso Creek Picnic Creek - Little Colorado River	AZ15020001-015	Yes 4A: Turbidity/suspended sediment concentration (turbidity TMDL approved in 2000) Other: Insufficient monitoring
7 Rainbow Lake	AZL15020005-1170	Yes 4A: Nutrients and pH (TMDLs approved in 2000) Other: Missing core parameters
Middle Gila Watershed		
8 Cash Mine Creek headwaters - Hassayampa River	AZ15070103-349	Yes 4A: Copper, zinc (metals loadings addressed in Hassayampa TMDLs approved in 2002) Other: Insufficient monitoring
9 Cash Mine Creek, <u>unnamed tributary of</u> headwaters - Cash Mine Creek	AZ15070103-415	Yes 4A: Cadmium, copper, zinc (loadings addressed in Hassayampa TMDLs approved in 2002) Other: Lead, insufficient monitoring
10 Hassayampa River headwaters - Copper Creek	AZ15070103-007A	Yes 4A: Cadmium, copper, zinc, and pH (TMDLs approved in 2002) Other: Missing core parameters
Salt River Watershed		

Surface Water	Reach or Lake Number	On the 2004 Planning List Pollutants or Parameters of Concern
11 Christopher Creek headwaters - Tonto Creek	AZ15060105-353	Yes 4a: <i>Escherichia coli</i> (TMDL approved in 2004) Other: Turbidity/suspended sediment concentration
12 Gibson Mine tributary headwaters - Pinto Creek	AZ15060103-887	Yes 4A: Copper (loading addressed in Pinto Creek copper TMDL approved in 2001) Other: pH (low), zinc, missing core parameters
13 Pinto Creek headwaters - tributary at 33 19 27/ 110 54 56	AZ15060103-018A	Yes 4A: Copper (TMDL approved in 2001) Other: Insufficient monitoring
14 Pinto Creek tributary at 33 19 27 / 110 54 56 - Ripper Spring	AZ15060103-018B	Yes 4A: Copper (TMDL approved in 2001) Other: Selenium, zinc, missing core parameters
San Pedro - Willcox Playa - Rio Yaqui Watershed (no Category 4 waters)		
Santa Cruz - Rio Magdalena - Rio Sonoyta		
15 Alum Gulch headwaters - 31 28 20 / 110 43 51	AZ15050301-561A	Yes 4A: Cadmium, copper, pH (low), zinc (TMDLs approved in 2003) Other: Missing core parameter
16 Alum Gulch 31 28 20 / 110 43 51 - 31 29 17/ 110 44 25	AZ15050301-561B	Yes 4A: Cadmium, copper, pH (low), zinc (TMDLs approved in 2003) Other: Missing core parameters
17 Arivaca Lake	AZL15050304-0080	Yes 4A: Mercury in fish tissue (TMDL approved in 1999) Other: Dissolved oxygen, pH (high), selenium, fish kill in 1999, missing core parameters
18 Cox Gulch headwaters - 3R Canyon	AZ15050301-560	Yes 4A: Cadmium, copper, zinc, and pH (low) (loadings included in 3R Canyon TMDLs approved in 2003) Other: Missing core parameters
19 Cox Gulch, <u>unnamed tributary of</u> headwaters - Cox Gulch	AZ15050301-877	Yes 4A: Cadmium, copper, zinc, and pH (low) (loadings included in 3R Canyon TMDLs approved in 2003) Other: Insufficient monitoring
20 Harshaw Creek headwaters - Sonoita Creek	AZ15050301-025	Yes 4A: Copper and pH (low) (TMDLs approved in 2003) Other: Missing core parameter
21 Harshaw Creek, <u>unnamed tributary of</u> (Endless Chain Mine tributary) headwaters - Harshaw Creek	AZ15050301-888	Yes 4A: Copper and pH (low) (loadings included in TMDLs for Harshaw Creek approved in 2003)
22 Humbolt Canyon headwaters - Alum Gulch	AZ15050301-340	Yes 4A: Cadmium, copper, zinc, and pH (low) (TMDLs for Alum Gulch approved in 2003) Other: Missing core parameters
23 Pena Blanca Lake	AZL15050301-1070	Yes 4A: Mercury in fish tissue (TMDL approved in 1999) Other: pH (low), selenium, turbidity, missing core parameters
24 Three R Canyon headwaters - 31 28 35 / 110 46 19	AZ15050301-558A	Yes 4A: Cadmium, copper, zinc, and pH (low) (TMDLs approved in 2003) Other: Insufficient monitoring
25 Three R Canyon 31 28 35 / 110 46 19 - 31 28 27/ 110 47 12	AZ15050301-558B	Yes 4A: Cadmium, copper, zinc, and pH (low) (TMDLs approved in 2003) Other: Missing core parameters
26 Three R Canyon 31 28 27 / 110 47 12 - Sonoita Creek	AZ15050301-558C	Yes 4A: Copper and pH (low) (TMDLs approved in 2003) Other: Missing core parameter
27 Three R Canyon, <u>unnamed tributary of</u> headwaters - Three R Canyon	AZ15050301-889	Yes 4A: Cadmium, copper, zinc, and pH (low) (loadings for this tributary included in the TMDLs for 3R Canyon approved in 2003) Other: Insufficient monitoring

Surface Water	Reach or Lake Number	On the 2004 Planning List Pollutants or Parameters of Concern
Upper Gila Watershed		
Luna Lake	AZL15040004-0840	Yes 4A: Dissolved oxygen, pH (high), and a fish kill in 1999 (Nutrient TMDL approved in 2000. TMDL addressed low dissolved oxygen, high pH, and fish kills.) Other: Missing core parameters
Verde Watershed		
Grande Wash headwaters - Ashbrook Wash	AZ15060203-991	Yes 4B: <i>Escherichia coli</i> (Fountain Hills WWTP has now changed disposal method to recharge, thereby eliminating discharges to this wash. <i>E. coli</i> levels are expected to meet water quality standards for the next assessment.) Other: Missing core parameters
Oak Creek At Slide Rock State Park	AZ15060202-018B	Yes 4A: <i>Escherichia coli</i> and swimming closures (TMDL approved in 1999) Other: Missing core parameters
Pecks Lake	AZL15060202-1060	Yes 4A: Dissolved oxygen (nutrient TMDL approved in 2000 addressed low dissolved oxygen.) Other: Missing core parameters
Stoneman Lake	AZL15060202-1490	Yes 4A: pH (high) (nutrient TMDL approved in 2000 addressed high pH.) Other: Arsenic, missing core parameters
Verde River Oak Creek - Beaver Creek	AZ15060202-015	Yes 4A: Turbidity/suspended sediment concentration (turbidity TMDL approved in 2002) Other: Insufficient monitoring
Verde River Beaver Creek - HUC boundary 15060203	AZ15060202-001	Yes 4A: Turbidity/suspended sediment concentration (turbidity TMDL approved in 2002) Other: Insufficient monitoring
Verde River West Clear Creek - Fossil Creek	AZ15060203-025	Yes 4A: Turbidity/suspended sediment concentration (turbidity TMDL approved in 2002 in adjacent reaches) Other: Selenium

Table 27. Category 3 -- Inconclusive Waters

All Designated Uses Assessed as "Inconclusive"
All Waters are On the Planning List for Follow Up Monitoring

Surface Water	Reach or Lake Number	On the 2004 Planning List Pollutants or Parameters of Concern
Bill Williams Watershed		
Big Sandy River Deluge Wash - Tule Wash	AZ15030201-011	Yes: Turbidity/Suspended sediment concentration, missing core parameters
Big Sandy River Rupley Wash - Alamo Lake North	AZ15030201-001	Yes: Dissolved oxygen, missing core parameters
Butte Creek headwaters - Boulder Creek	AZ15030202-163	Yes: Mercury, selenium, missing core parameters
Date Creek Cottonwood Creek - unnamed tributary (15030203-008)	AZ15030203-003	Yes: Insufficient monitoring
Francis Creek headwaters - Burro Creek	AZ15030202-012	Yes: Turbidity/Suspended sediment concentration, insufficient monitoring
Kirkland Creek Skull Valley - Santa Maria River	AZ15030203-015	Yes: <i>Escherichia coli</i> , insufficient monitoring
Wilder Creek headwaters - Boulder Creek	AZ15030202-007	Yes: Missing core parameters
Colorado - Grand Canyon Watershed		
Beaver Dam Wash Utah border - Virgin River	AZ15010010-009	Yes: Insufficient monitoring
Boucher Creek California Wash - Colorado River	AZ15010002-017	Yes: Insufficient monitoring
Chuar (Lava) Creek tributary at 36 11 36 / 111 52 17 - Lava Creek	AZ15010001-024B	Yes: Insufficient monitoring
Clear Creek tributary at 36 09 12 / 111 58 25 - Colorado River	AZ15010001-025B	Yes: Insufficient monitoring
Crystal Creek tributary at 36 13 42 / 112 11 48 - Colorado River	AZ15010002-018B	Yes: Insufficient monitoring
Deer Creek tributary at 36 26 16 / 112 28 15.5 - Colorado River	AZ15010002-019B	Yes: Insufficient monitoring
Garden Creek headwaters - Pipe Creek	AZ15010002-841	Yes: Insufficient monitoring
Havasu Canyon Creek Havasupai Indian Reservation - Colorado River	AZ15010004-001	Yes: Turbidity/suspended sediment concentration, insufficient monitoring

Surface Water	Reach or Lake Number	On the 2004 Planning List Pollutants or Parameters of Concern
Hermit Creek Hermit Pack Trail crossing - Colorado River	AZ15010002-020B	Yes: Insufficient monitoring
Kwagunt Creek tributary at 36 13 29 / 111 55 24 - Colorado River	AZ15010001-031B	Yes: Insufficient monitoring
Lake Powell	AZL14070006-1130	Yes: <i>Escherichia coli</i> , missing core parameters
Monument Creek headwaters - Colorado River	AZ15010002-845	Yes: Insufficient monitoring
Nankoweap Creek tributary at 36 15 30 / 111 15 22 - Colorado River	AZ15010001-033B	Yes: Insufficient monitoring
National Canyon Creek headwaters - Colorado River	AZ15010002-016	Yes: Insufficient monitoring
Royal Arch Creek headwaters - Colorado River	AZ15010002-871	Yes: Insufficient monitoring
Saddle Canyon Creek tributary at 36 21 35.5 / 112 22 46 - Colorado River	AZ15010002-703B	Yes: Insufficient monitoring
Shinumo Creek tributary at 36 18 21 / 112 18 03 - Colorado River	AZ15010002-029B	Yes: Insufficient monitoring
Spring Canyon Creek headwaters - Colorado River	AZ15010002-318	Yes: Insufficient monitoring
Tapeats Creek headwaters - Colorado River	AZ15010002-696	Yes: Insufficient monitoring
Three Springs Creek headwaters - Colorado River	AZ15010002-1180	Yes: Insufficient monitoring
Vasey's Paradise (Spring) at Colorado River	AZ15010001-SP01	Yes: Insufficient monitoring
Colorado - Lower Gila Watershed		
Colorado River, <u>unnamed tributary</u> (near Thumb Butte) headwaters - Colorado River	AZ15030101-560	Yes: Insufficient monitoring
Hunter's Hole (lake)	AZL15030108-0660	Yes: Selenium, insufficient monitoring
Lake Mohave	AZL15030101-0960	Yes: Insufficient monitoring
Mittry Lake	AZL15030107-0950	Yes: Insufficient monitoring

Surface Water	Reach or Lake Number	On the 2004 Planning List Pollutants or Parameters of Concern
Little Colorado - San Juan Watershed		
Black Canyon Lake	AZL15020010-0180	Yes: Fish kill related to fire (2002), insufficient monitoring
Brown Creek headwaters - Silver Creek	AZ15020005-016	Yes: Insufficient monitoring
Buck Springs Canyon Creek headwaters - Leonard Canyon	AZ15020008-557	Yes: pH (low), turbidity/suspended sediment concentration, insufficient monitoring
Bunch Reservoir	AZL15020001-0230	Yes: Dissolved oxygen, missing core parameters
Carnero Lake	AZL15020001-0260	Yes: Dissolved oxygen, pH (high), missing core parameters
Chevelon Creek headwaters - West Chevelon Creek	AZ15020010-006	Yes: Dissolved oxygen, insufficient monitoring
Cholla Lake	AZL15020008-0320	Yes: Fish kill (2002), missing core parameters
Fish Creek headwaters - Little Colorado River	AZ15020001-211	Yes: Mercury, insufficient monitoring
Hall Creek headwaters - Little Colorado River	AZ15020001-012	Yes: Insufficient monitoring
Lee Valley Creek Lee Valley Reservoir - East Fork Little Colorado River	AZ15020001-232B	Yes: Insufficient monitoring
Little Colorado River HUC boundary 15020001 - unnamed tributary (15020002-025)	AZ15020002-024	Yes: Insufficient monitoring
Little Colorado River Zion Reservoir - Concho Creek	AZ15020002-016	Yes: Suspended sediment concentration, missing core parameters
Little Colorado River, South Fork headwaters - Little Colorado River	AZ15020001-027	Yes: Insufficient monitoring
McKay Reservoir	AZL15020001-0007	Yes: Dissolved oxygen, pH (high), insufficient monitoring
Nelson Reservoir	AZL15020001-1000	Yes: Insufficient monitoring
Porter Creek headwaters - Show Low Creek	AZ15020005-246	Yes: Turbidity/suspended sediment concentration, insufficient monitoring
River Reservoir	AZL15020001-1220	Yes: Missing core parameters
Silver Creek Seven Mile Draw - Little Colorado River	AZ15020005-001	Yes: Turbidity/suspended sediment concentration, insufficient monitoring
Tunnel Reservoir	AZL15020001-1550	Yes: Dissolved oxygen, missing core parameters
Walnut Creek Pine Lake - Rainbow Lake	AZ15020005-238	Yes: Insufficient monitoring

Surface Water	Reach or Lake Number	On the 2004 Planning List Pollutants or Parameters of Concern
Willow Creek headwaters - East Clear Creek	AZ15020008-011	Yes: Insufficient monitoring
Willow Spring Creek headwaters - Chevelon Creek	AZ15020010-240	Yes: Insufficient monitoring
Woods Canyon Creek headwaters - Chevelon Creek	AZ15020010-084	Yes: Dissolved oxygen, insufficient monitoring
Middle Gila Watershed		
Antelope Creek headwaters - Martínez Creek	AZ15070103-010	Yes: Insufficient monitoring
Arizona Canal Granite Reef Dam - Cholla water treatment plant	AZ15060106B-099A	Yes: Missing core parameters
Arizona Canal Cholla water treatment plant - HUC boundary 15070102	AZ15060106B-099B	Yes: Missing core parameters
Blue John Creek headwaters - unnamed tributary to Lynx Creek	AZ15070102-471	Yes: Cadmium, copper, zinc, insufficient monitoring
Buckeye Canal Gila River - South Extension Canal	AZ15070101-209	Yes: DDE (DDT pesticide metabolite), missing core parameters
Consolidated Canal HUC boundary 15060106B - above water treatment plant intake	AZ15050100-074A	Yes: Missing core parameters
Dripping Spring Wash headwaters - Gila River	AZ15050100-011	Yes: Insufficient monitoring
Eastern Canal Water treatment plant intake (below Warner Road) - terminus	AZ15050100-207B	Yes: Missing core parameters
Fain Lake	AZL15070102-0005	Yes: Turbidity, insufficient monitoring
Galena Gulch headwaters - Agua Fria River	AZ15070102-745	Yes: Cyanide, insufficient monitoring
Gila River Dripping Spring Wash - San Pedro River	AZ15050100-009	Yes: Insufficient monitoring
Gila River Mineral Creek - Donnelly Wash	AZ15050100-007	Yes: Copper, turbidity/suspended sediment concentration, insufficient monitoring
Gila River Ashurst-Hayden Dam - Florence wastewater treatment plant	AZ15050100-003B	Yes: Copper, insufficient monitoring
Grand Canal HUC boundary 15070101 - New River	AZ15070102-250	Yes: Missing core parameters
Hassayampa River, <u>unnamed tributary of</u> headwaters - Hassayampa River (segment 007)	AZ15070102-417	Yes: Copper, insufficient monitoring

Surface Water	Reach or Lake Number	On the 2004 Planning List Pollutants or Parameters of Concern
Indian Bend Wash headwaters - Salt River	AZ15060106B-179	Yes: Lead, missing core parameters
Little Ash Creek headwaters - Ash Creek	AZ15070102-039	Yes: Insufficient monitoring
Lynx Creek headwaters - 34 34 29 / 112 21 05	AZ15070102-033A	Yes: Cadmium, copper, insufficient monitoring
Lynx Creek, <u>unnamed tributary of</u> headwaters - Lynx Creek	AZ15070102-124	Yes: Cadmium, copper, zinc, insufficient monitoring
Martinez Canyon Creek headwaters - Box Canyon	AZ15050100-080	Yes: Insufficient monitoring
Mineral Creek headwaters - Devils Canyon	AZ15050100-012A	Yes: Insufficient monitoring
New River headwaters - Interstate 17	AZ15070102-006A	Yes: Insufficient monitoring
Salt River 2 km below Granite Reef Dam - Interstate 10 bridge	AZ15060106B-001B	Yes: Insufficient monitoring
South Canal Granite Reef Dam - Consolidated Canal	AZ15060106B-180	Yes: Missing core parameters
Tempe Canal HUC boundary 15050100 - Western Canal	AZ15050100-115	Yes: Missing core parameters
Turkey Creek headwaters - unnamed tributary at 34 19 28 / 112 21 28	AZ15070102-036A	Yes: Missing core parameters
Western Canal Tempe Canal - HUC boundary 15050100	AZ15060106B-262	Yes: Missing core parameters
Western Canal HUC boundary 15050100 - terminus	AZ15050100-990	Yes: Missing core parameters
Salt River Watershed		
Bear Wallow Creek, <u>North Fork</u> headwaters - Bear Wallow Creek	AZ15060101-022	Yes: Missing core parameters
Bear Wallow Creek, <u>South Fork</u> headwaters - Bear Wallow Creek	AZ15060101-258	Yes: Insufficient monitoring
Bloody Tanks Wash Schultz Ranch - Miami Wash	AZ15060103-034B	Yes: Copper, insufficient monitoring
Cottonwood Canyon headwaters - Pinto Creek	AZ15060103-891	Yes: Insufficient monitoring
Gold Gulch Canyon headwaters - Pinto Creek	AZ15060103-894	Yes: Insufficient monitoring

Surface Water	Reach or Lake Number	On the 2004 Planning List Pollutants or Parameters of Concern
Hay Creek headwaters - West Fork Black River	AZ15060101-353	Yes: Insufficient monitoring
Lake Sierra Blanca	AZL15060101-1390	Yes: Fish kill (1998), insufficient monitoring
Miller Springs Canyon headwaters - Pinto Creek	AZ15060103-892	Yes: Selenium, turbidity/suspended sediment concentration, missing core parameters
Pinto Creek, <u>West Fork</u> headwaters - Pinto Creek	AZ15060103-066	Yes: Insufficient monitoring
Reservation Creek headwaters - Black River	AZ15060101-010	Yes: Insufficient monitoring
Salt River Roosevelt Lake - Apache Lake	AZ15060106A-024	Yes: Insufficient monitoring
Snake Creek headwaters - Black River	AZ15060101-045	Yes: Missing core parameters
Stinky Creek Fort Apache Reservation - West Fork Black River	AZ15060101-352A	Yes: Missing core parameters
San Pedro - Willcox Playa - Rio Yaqui Watershed		
Aravaipa Creek Wilderness Area - San Pedro River	AZ15050203-004C	Yes: Missing core parameters
Bass Canyon, <u>unnamed tributary of</u> headwaters - Bass Canyon Creek	AZ15050203-935	Yes: Insufficient monitoring
C Canyon headwaters - Mule Gulch	AZ15080301-342	Yes: Insufficient monitoring
Dubacher Canyon headwaters - Mule Gulch	AZ15080301-075	Yes: Insufficient monitoring
Grant Creek headwaters - trib at 32 38 09 / 109 56 35	AZ15050201-033A	Yes: Insufficient monitoring
Hendricks Gulch headwaters - Mule Gulch	AZ15080301-335	Yes: Insufficient monitoring
Leslie Canyon Creek headwaters - Whitewater Draw	AZ15080301-007	Yes: Insufficient monitoring
Miller Canyon Creek headwaters - San Pedro River	AZ15050202-409A	Yes: Insufficient monitoring
Morales Creek headwaters - Mule Gulch	AZ15080301-331	Yes: Insufficient monitoring
Mule Gulch Highway 80 bridge - Whitewater Draw	AZ15080301-090D	Yes: Copper exceedance and insufficient monitoring

Surface Water	Reach or Lake Number	On the 2004 Planning List Pollutants or Parameters of Concern
Mural and Grassy Hill tributary headwaters - Mule Gulch	AZ15080301-334	Yes: Insufficient monitoring
OK and Youngblood tributary headwaters - Brewery Gulch	AZ15080301-1000	Yes: Insufficient monitoring
Riggs Flat Lake	AZL15050201-1210	Yes: Turbidity, insufficient monitoring
Snow Flat Lake	AZL15050201-1420	Yes: Insufficient monitoring
Spring Canyon Creek headwaters - Mule Gulch	AZ15080301-333	Yes: Insufficient monitoring
Twin Pond	AZL15080302-0001	Yes: Insufficient monitoring
Ward Canyon Creek headwaters - Turkey Creek	AZ15050201-433	Yes: Insufficient monitoring
Whitewater Draw Gadwell Canyon - unnamed tributary (15080301-003)	AZ15080301-004	Yes: Lead, insufficient monitoring
Whitewater unnamed tributary (15080301-003) - unnamed tributary at 31 20 36 / 109 34 46	AZ15080301-002A	Yes: Lead, zinc, insufficient monitoring
Winwood Canyon headwaters - Mule Gulch	AZ15080301-340	Yes: Insufficient monitoring
Santa Cruz - Rio Magdalena - Rio Sonoyta		
Chimenea Creek headwaters - Rincon Creek	AZ15050302-140	Yes: Insufficient monitoring
Loma Verde Wash headwaters - unnamed tributary to Tanque Verde Wash	AZ15050302-268	Yes: Insufficient monitoring
Madera Canyon Creek headwaters - tributary at 31 43 42 / 110 52 50	AZ15050301-322A	Yes: Insufficient monitoring
Madrona Creek headwaters - Rincon Creek	AZ15050302-138	Yes: Insufficient monitoring
Pena Blanca Canyon Creek Mexico border - Pena Blanca Lake	AZ15050301-808	Yes: Insufficient monitoring
Potrero Creek Interstate 19 - Santa Cruz River	AZ15050301-500B	Yes: Chlorine, copper, missing core parameters
Santa Cruz River Roger Road WWTP outfall - Rillito Creek	AZ15050301-003B	Yes: Missing core parameters
Santa Cruz River HUC boundary 15050303 - Baumgartner Road	AZ15050303-005A	Yes: Missing core parameters

Surface Water	Reach or Lake Number	On the 2004 Planning List Pollutants or Parameters of Concern
Sonoita Creek headwaters - Patagonia WWTP	AZ15050301-013A	Yes: Insufficient monitoring
Sycamore Canyon Creek headwaters - Mexico border	AZ15080200-002	Yes: Insufficient monitoring
Upper Gila Watershed		
Cave Creek, North Fork headwaters - Cave Creek	AZ15040006-856	Yes: Insufficient monitoring
Cluff Pond #3	AZL15040005-0370	Yes: Insufficient monitoring
East Turkey Creek headwaters - unnamed tributary at 31 58 22 / 109 12 17	AZ15040006-837A	Yes: Insufficient monitoring
Gila River San Francisco River - Eagle Creek	AZ15040005-024	Yes: Turbidity/suspended sediment concentration, insufficient monitoring
Gila River Eagle Creek - Bonita Creek	AZ15040005-023	Yes: Turbidity/suspended sediment concentration, insufficient monitoring
Turkey Creek headwaters - Campbell Blue Creek	AZ15040004-060	Yes: Missing core parameters
Verde Watershed		
Apache Creek headwaters - Walnut Creek	AZ15060201-019	Yes: Insufficient monitoring
Beaver Creek Dry Beaver Creek - Verde River	AZ15060202-002	Yes: Turbidity/suspended sediment concentration, missing core parameters
Bitter Creek Jerome WWTP - 2.5 miles below wastewater treatment plant	AZ15060202-066B	Yes: Insufficient monitoring
Bitter Creek, <u>unnamed tributary of</u> headwaters - Bitter Creek	AZ15060202-868	Yes: Cadmium, copper, pH (low), zinc, insufficient monitoring
Camp Creek headwaters - Verde River	AZ15060203-031	Yes: Insufficient monitoring
Colony Wash headwaters - Fort McDowell Indian Reservation	AZ15060203-998	Yes: Insufficient monitoring
East Verde River headwaters - Ellison Creek	AZ15060203-022A	Yes: Turbidity/suspended sediment concentration, insufficient monitoring
Ellison Creek headwaters - East Verde River	AZ15060203-459	Yes: Insufficient monitoring
Fossil Creek headwaters - Verde River	AZ15060203-024	Yes: Insufficient monitoring
Fountain Lake	AZL15060203-0003	Yes: Insufficient monitoring

Surface Water	Reach or Lake Number	On the 2004 Planning List Pollutants or Parameters of Concern
Green Valley Lake	AZL15060203-0015	Yes: Insufficient monitoring
Horseshoe Reservoir	AZL15060203-0620	Yes: Turbidity, missing core parameters
Munds Creek headwaters - Oak Creek	AZ15060202-415	Yes: Missing core parameters, insufficient seasonal coverage
Oak Creek headwaters - West Fork Oak Creek	AZ15060202-019	Yes: Turbidity/suspended sediment concentration, missing core parameters
Oak Creek Dry Creek - Spring Creek	AZ15060202-017	Yes: Insufficient monitoring
Oak Creek Spring Creek - Verde River	AZ15060202-016	Yes: Insufficient monitoring
Oak Creek, West Fork headwaters - Oak Creek	AZ15060202-020	Yes: Insufficient monitoring
Perkins Tank	AZL15060202-1080	Yes: Dissolved oxygen, turbidity, insufficient monitoring
Pine Creek headwaters - unnamed tributary at 34 21 51 / 111 26 46	AZ15060203-049A	Yes: Insufficient monitoring
Pine Creek unnamed tributary at 34 21 51 / 111 26 46 - East Verde River	AZ15060203-049B	Yes: Insufficient monitoring
Roundtree Canyon Creek headwaters - Tangle Creek	AZ15060203-853	Yes: Insufficient monitoring
Scholze Lake	AZL15060202-1350	Yes: Dissolved oxygen, lead, nitrogen, turbidity, missing core parameters
Spring Creek Coffee Creek - Oak Creek	AZ15060202-022	Yes: Insufficient monitoring
Stehr Lake	AZL15060203-1480	Yes: Insufficient monitoring
Sullivan Lake	AZL15060202-3370	Yes: pH (high), insufficient monitoring
Sycamore Creek Cedar Creek - Verde River	AZ15060202-026	Yes: Insufficient monitoring
Sycamore Creek headwaters - Verde River	AZ15060203-055	Yes: Insufficient monitoring
Verde River Granite Creek - Hell Canyon	AZ15060202-052	Yes: Insufficient monitoring
Verde River Hell Canyon - unnamed reach number 15060202-065	AZ15060202-038	Yes: Insufficient monitoring
Verde River Sycamore Creek - Salt River	AZ15060203-001	Yes: Insufficient monitoring events

Surface Water	Reach or Lake Number	On the 2004 Planning List Pollutants or Parameters of Concern
Webber Creek headwaters - East Verde River	AZ15060203-058	Yes: Insufficient monitoring
West Clear Creek Meadow Canyon - Verde River	AZ15060203-026B	Yes: Missing core parameters
Wet Beaver Creek Long Canyon - Rarick Canyon	AZ15060202-004	Yes: Missing core parameters
Wet Beaver Creek Rarick Canyon - Dry Beaver Creek	AZ15060202-003	Yes: Insufficient monitoring
Wet Bottom Creek headwaters - Verde River	AZ15060203-020	Yes: Insufficient monitoring

Table 28. Category 2 – Attaining Some Uses

At least One Designated Use Assessed as “Attaining” and All Others are “Inconclusive”
All Waters are On the Planning List for Follow Up Monitoring

Surface Water	Reach or Lake Number	On 2004 Planning List Pollutants or Parameters of Concern
Bill Williams Watershed		
Big Sandy River Sycamore Creek - Burro Creek	AZ15030201-004	Yes: Selenium
Bill Williams River Point B - Colorado River	AZ15030204-001	Yes: Turbidity/suspended sediment concentration, missing core parameters
Boulder Creek Copper Creek - Burro Creek	AZ15030202-005B	Yes: Mercury, selenium, missing core parameters
Burro Creek Francis Creek - Boulder Creek	AZ15030202-008	Yes: Copper, mercury, missing core parameters
Santa Maria River Bridle Wash - Date Creek	AZ15030203-009	Yes: <i>Escherichia coli</i>
Colorado - Grand Canyon Watershed		
Colorado River Lake Powell - Paria River	AZ14070006-001	Yes: Missing core parameters
Dogtown Reservoir	AZL15010004-0480	Yes: Selenium, dissolved oxygen, pH (high), turbidity, missing core parameters
Colorado - Lower Gila Watershed		
Colorado River Bill Williams River - Osborne Wash	AZ15030104-020	Yes: Selenium
Colorado River Indian Wash - Imperial Dam	AZ15030104-001	Yes: Suspended sediment concentration
Colorado River Main Canal - Mexico border	AZ15030107-001	Yes: Suspended sediment concentration, DDE, dieldrin, selenium
Lake Havasu	AZL15030101-0590A	Yes: Mercury, selenium, <i>Escherichia coli</i>
Little Colorado - San Juan Watershed		
Ashurst Lake	AZL15020015-0090	Yes: Turbidity, missing core parameters
Barbershop Canyon Creek headwaters - East Clear Creek	AZ15020008-537	Yes: Missing core parameter
Billy Creek headwaters - Show Low Creek	AZ15020005-019	Yes: Turbidity/suspended sediment concentration, <i>Escherichia coli</i> , missing core parameter
Blue Ridge Reservoir	AZL15020008-0200	Yes: Dissolved oxygen, missing core parameters

Surface Water	Reach or Lake Number	On 2004 Planning List Pollutants or Parameters of Concern
Chevelon Creek Black Canyon - Little Colorado River	AZ15020010-001	Yes: Turbidity/suspended sediment concentration
Clear Creek Reservoir	AZL 15020008-0340	Yes: Dissolved oxygen, missing core parameters
Colter Creek headwaters - Nutrioso Creek	AZ15020001-293	Yes: Missing core parameter
East Clear Creek headwaters - Yeager Canyon	AZ15020008-009	Yes: Dissolved oxygen, missing core parameter
Kinnikinick Lake	AZL 15020015-0730	Yes: Turbidity/suspended sediment concentration, selenium, missing core parameters
Lee Valley Reservoir	AZL 15020001-0770	Yes: Missing core parameters
Little Colorado River, <u>East Fork</u> headwaters - Hall Creek	AZ15020001-230	Yes: Missing core parameters
Little Colorado River, <u>West Fork</u> headwaters - Government Springs	AZ15020001-013A	Yes: Missing core parameters
Little Colorado River, <u>West Fork</u> Government Springs - Little Colorado River	AZ15020001-013B	Yes: Copper, missing core parameters
Mineral Creek headwaters - Concho Creek	AZ15020002-648	Yes: Dissolved oxygen, missing core parameter
Rio de Flag Flagstaff WWTP - San Francisco Wash	AZ15020015-004B	Yes: Turbidity/suspended sediment concentration
Show Low Creek headwaters - Linden Wash	AZ15020005-012	Yes: Turbidity/suspended sediment concentration
Silver Creek headwaters - Show Low Creek	AZ15020005-013	Yes: Dissolved oxygen, turbidity/suspended sediment concentration, missing core parameter
Woods Canyon Lake	AZL 15020010-1700	Yes: Missing core parameters
Middle Gila Watershed		
Gila River San Pedro River - Mineral Creek	AZ15050100-008	Yes: Turbidity/suspended sediment concentration
Hassayampa River Copper Creek - Blind Indian Creek	AZ15070103-007B	Yes: <i>Escherichia coli</i> , cadmium
Hassayampa River Sols Wash - 8 miles below Wickenburg	AZ15070103-002A	Yes: <i>Escherichia coli</i>
Lake Pleasant	AZL 15070102-1100	Yes: Ammonia, selenium, missing core parameter
Lynx Lake	AZL 15070102-0860	Yes: Lead, manganese, missing core parameters
Papago Park Ponds	AZL 15060106B-1030	Yes: Missing core parameters

Surface Water	Reach or Lake Number	On 2004 Planning List Pollutants or Parameters of Concern
Salt River Watershed		
Apache Lake	AZL15060106A-0070	Yes: Dissolved oxygen, missing core parameters
Bear Wallow Creek North and South Forks - Black River	AZ15060101-023	Yes: Missing core parameters
Beaver Creek headwaters - Black River	AZ15060101-008	Yes: Turbidity/suspended sediment concentration, missing core parameter
Big Lake	AZL15060101-0160	Yes: Dissolved oxygen, missing core parameters
Black River Beaver Creek - Reservation Creek	AZ15060101-007	Yes: Missing core parameters
Black River, East Fork headwaters - Black River	AZ15060101-009	Yes: Missing core parameter
Black River, West Fork headwaters - Black River East Fork	AZ15060101-048	Yes: Missing core parameters
Canyon Creek headwaters - White Mountain Apache Reservation	AZ15060103-014	Yes: Fish kill due to fire (2002)
Fish Creek headwaters - Black River	AZ15060101-032	Yes: Copper, missing core parameters
Roosevelt Lake	AZL15060103-1240	Yes: Turbidity/suspended sediment concentration, missing core parameters
Rye Creek headwaters - Tonto Creek	AZ15060105-014	Yes: Missing core parameter
Saguaro Lake	AZL15060106A-1290	Yes: Missing core parameters
Salt River Pinal Creek - Roosevelt Lake	AZ15060103-004	Yes: <i>Escherichia coli</i> , total nitrogen, turbidity/suspended sediment concentration
Spring Creek headwaters - Tonto Creek	AZ15060105-010	Yes: Missing core parameter
San Pedro - Willcox Playa - Rio Yaqui Watershed		
Copper Creek headwaters - Prospect Canyon	AZ15050203-022A	Yes: Selenium
Double R Canyon Creek headwaters - Bass Canyon Creek	AZ15050203-902	Yes: Missing core parameter
Ramsey Canyon Creek headwaters - Forest Road 110	AZ15050202-404A	Yes: Missing core parameter
San Pedro River Charleston - Walnut Gulch	AZ15050202-006	Yes: Turbidity/suspended sediment concentration

Surface Water	Reach or Lake Number	On 2004 Planning List Pollutants or Parameters of Concern
San Pedro River Hot Springs Creek - Redfield Canyon	AZ15050203-011	Yes: <i>Escherichia coli</i> , turbidity/suspended sediment concentration
Whitewater Draw Unnamed trib. at 31 20 36 / 109 34 46 - Mexico border	AZ15080301-002B	Yes: Lead, missing core parameters
Santa Cruz - Rio Magdalena - Rio Sonoyta		
Cienega Creek headwaters - Gardner Canyon	AZ15050302-006A	Yes: Missing core parameter
Cienega Creek Gardner Canyon - USGS gage (Pantano Wash)	AZ15050302-006B	Yes: Missing core parameter
Kennedy Lake	AZL15050301-0720	Yes: Missing core parameters
Patagonia Lake	AZL15050301-1050	Yes: Missing core parameters
Sabino Canyon Creek tributary at 32 23 28 / 110 47 00 - Tanque Verde Wash	AZ15050302-014B	Yes: Missing core parameters
Santa Cruz River Nogales WWTP - Josephine Canyon	AZ15050301-009	Yes: Missing core parameters
Santa Cruz River Josephine Canyon - Tubac Bridge	AZ15050301-008A	Yes: Turbidity/suspended sediment concentration, chlorine, missing core parameters
Santa Cruz River Tubac Bridge - Sopori Wash	AZ15050301-008B	Yes: Missing core parameters
Santa Cruz River Canada del Oro - HUC boundary 15050303	AZ15050301-001	Yes: Chlorine
Upper Gila Watershed		
Ash Creek tributary at 32 45 37 / 109 52 22 - Gila River	AZ15040005-040B	Yes: Missing core parameters
Blue River New Mexico border - KP Creek	AZ15040004-026	Yes: Missing core parameters
Blue River KP Creek - Strayhorse Creek	AZ15040004-025A	Yes: Missing core parameters
Campbell Blue Creek headwaters - Blue River	AZ15040004-028	Yes: Missing core parameter
Cave Creek South Fork of Cave Creek - USFS boundary	AZ15040006-852B	Yes: Turbidity/suspended sediment concentration
Cave Creek, South Fork headwaters - Cave Creek	AZ15040006-849	Yes: <i>Escherichia coli</i>
Dankworth Ponds	AZL15040005-0440	Yes: Selenium, turbidity, missing core parameters

Surface Water	Reach or Lake Number	On 2004 Planning List Pollutants or Parameters of Concern
Eagle Creek headwaters - unnamed tributary at 33 23 24 / 109 29 35	AZ15040005-028A	Yes: Missing core parameters
Frye Canyon Creek headwaters - Frey Mesa Reservoir	AZ15040005-988A	Yes: Missing core parameters
Gila River New Mexico border - Bitter Creek	AZ15040002-004	Yes: Selenium
KP Creek headwaters - Blue River	AZ15040004-029	Yes: Missing core parameters
Roper Lake	AZL15040005-1250	Yes: Missing core parameter
San Francisco River New Mexico border - Blue River	AZ15040004-004	Yes: Turbidity/suspended sediment concentration
San Francisco River Blue River - Limestone Gulch	AZ15040004-003	Yes: <i>Escherichia coli</i>
San Francisco River Limestone Gulch - Gila River	AZ15040004-001	Yes: Turbidity/suspended sediment concentration, copper, <i>Escherichia coli</i>
Verde Watershed		
Bartlett Lake	AZL15060203-0110	Yes: Missing core parameters
Granite Basin Lake	AZL15060201-0580	Yes: pH, ammonia, missing core parameters
East Verde River American Gulch - Verde River	AZ15060203-022C	Yes: Boron
J.D. Dam Lake	AZ15060202-0700	Yes: pH (low), missing core parameters
Pumphouse Wash headwaters - Oak Creek	AZ15060202-442	Yes: Missing core parameters
Verde River Sycamore Creek - Oak Creek	AZ15060202-025	Yes: Mercury, <i>Escherichia coli</i>
Verde River HUC boundary 15060203 - West Clear Creek	AZ15060203-027	Yes: <i>Escherichia coli</i> , missing core parameters
Verde River Tangle Creek - Ister Flat	AZ15060203-018	Yes: Turbidity/SSC, <i>Escherichia coli</i>
Verde River Horseshoe Dam - Alder Creek	AZ15060203-008	Yes: Missing core parameters
Verde River Camp Creek - Sycamore Creek	AZ15060203-003	Yes: Missing core parameters

Table 29. Category 1 -- Attaining All Uses

All Designated Uses are Assessed as "Attaining"

Surface Water	Reach or Lake Number	On 2004 Planning List Pollutants or Parameters of Concern
Bill Williams Watershed		
Trout Creek Cow Creek - Knight Creek	AZ15030201-014	No
Colorado - Grand Canyon Watershed (no Category 1 waters)		
Colorado - Lower Gila Watershed (no Category 1 waters)		
Little Colorado - San Juan Watershed (no Category 1 waters)		
Middle Gila Watershed		
Agua Fria River Sycamore Creek - Big Bug Creek	AZ15070102-023	No
Agua Fria River Little Squaw Creek - Cottonwood Creek	AZ15070102-017	No
Arnett Creek headwaters - Queen Creek	AZ15050100-1818	No
Cave Creek headwaters - Cave Creek Dam	AZ15060106B-026A	No
Hassayampa River Cottonwood Creek - Martinez Wash	AZ15070103-004	No
Sycamore Creek Tank Canyon - Agua Fria River	AZ15070102-024B	No
Tempe Town Lake	AZL15060106B-1588	No
Salt River Watershed		
Campaign Creek headwaters - Pinto Creek	AZ15060103-037	No
Cherry Creek tributary at 34 05 09 / 110 56 04 - Salt River	AZ15060103-015B	No
Coon Creek unnamed tributary at 33 46 42 / 110 54 25 - Salt River	AZ15060103-039B	No
Deer Creek headwaters - Rye Creek	AZ15060105-018	No
Greenback Creek headwaters - Tonto Creek	AZ15060105-005	No

Surface Water	Reach or Lake Number	On 2004 Planning List Pollutants or Parameters of Concern
Haigler Creek headwaters - unnamed reach at 34 12 23.1 / 111 00 11	AZ15060105-012A	No
Haunted Canyon headwaters - Pinto Creek	AZ15060103-879	No
Pinal Creek Jesse Lane - Salt River	AZ15060103-280D	No
Tonto Creek Rye Creek - Gun Creek	AZ15060105-008	No
San Pedro - Willcox Playa - Rio Yaqui Watershed		
Aravaipa Creek Stowe Gulch - Wilderness Area	AZ15050203-004B	No
Bass Canyon Creek tributary at 32 26 06 / 110 1318 - Hot Springs Canyon Creek	AZ15050203-899B	No
Buehman Canyon headwaters - end of Unique Waters	AZ15050203-010A	No
Hot Springs Canyon Creek headwaters - San Pedro River	AZ15050203-013	No
Rucker Canyon Creek headwaters - Whitewater Draw	AZ15080301-288	No
Santa Cruz - Rio Magdalena - Rio Sonoyta		
Redrock Canyon Creek headwaters - Harshaw Creek	AZ15050301-576	No
Santa Cruz River headwaters - Mexico border	AZ15050301-268	No
Upper Gila Watershed		
Blue River Strayhorse Creek - San Francisco River	AZ15040004-025B	No
Bonita Creek Park Creek - Gila River	AZ15040005-030	No
Eagle Creek Willow Creek - Sheep Wash	AZ15040005-027	No
Eagle Creek Sheep Wash - Gila River	AZ15040005-025	No

Surface Water	Reach or Lake Number	On 2004 Planning List Pollutants or Parameters of Concern
Verde Watershed		
Oak Creek Below Slide Rock State Park - Dry Creek	AZ15060202-018C	No
Verde River Unnamed reach 15060202-065 - Railroad Draw	AZ15060202-037	No



This reach of Trout Creek, near Wikieup, Arizona, was placed in Category 1 because it is attaining all designated uses.

What is Arizona removing from its 2002 303(d) List?

The parameters of concern being removed from the 2002 303(d) List and the reason for their removal were detailed in the assessment tables in Chapter IV. The following list (Table 30) provides a delist summary, showing a total of 58 parameters delisted from 31 streams and three lakes. Most of these changes were due to completion of a TMDL (23 parameters) or due to a change in water quality standards (25 parameters).

At least one of the following criteria for delisting a pollutant or reach is shown in **Table 30**, as established in the Impaired Water Identification Rule (Appendix B) (R18-11-605.E.2 and R18-11-604.B):

Criteria Number

1. EPA-approved TMDL has been developed for the pollutant.
2. New data indicate that the water quality standard is being met.
3. Change in the standard or designated use has resulted in the water quality standard no longer being exceeded.
4. Reevaluation of the assessment information indicates an error or deficiency in the original analysis resulted in an inappropriate listing.
5. Pollutant loadings from naturally occurring conditions alone are sufficient to cause a violation of the water quality standard.
6. Reach is split and no current or historic data exist in this portion of the reach that would support a listing.

Table 30. Pollutants and surface waters removed from 2002 303(d) List

Surface Water	Reach or Lake Number	Pollutant of Concern Removed From List	Criteria For Delist	Delist Surface Water
Bill Williams Watershed				
Alamo Lake	AZL15030204-0040	Low dissolved oxygen	2 - Current data indicates uses are being attained.	No. Remains on list due to ammonia, mercury in fish tissue, and high pH.
		Sulfide	3 - Change in standard. Data shows that new standard is attained.	
Boulder Creek unnamed wash at 34 41 14 / 113 03 34 - Wilder Creek	AZ15030202-006B	Fluoride	3 - Change in standard. Data shows that new standard is attained.	No. Remains on list due to mercury.
Colorado - Grand Canyon Watershed				
Colorado River Parashant - Diamond Creek	AZ15010002-003	Turbidity	3 - Change in standard. Moved to the Planning List.	No. Remains on the list due to selenium and suspended sediment concentration.
Virgin River Beaver Dam Wash - Big Bend Wash	AZ15010010-003	Fecal coliform	3 - Change in standard. <i>Escherichia coli</i> standard is being attained.	No. Remains on the list due to selenium and suspended sediment concentration.
		Turbidity	3 - Change in standard. Moved to the Planning List.	
Colorado - Lower Gila Watershed				
Painted Rock Borrow Pit Lake	AZ15070201-1010	Fecal coliform	3 - Change in standard. Moved to the Planning List for <i>Escherichia coli</i> monitoring (new standard).	No. Remains on list due to fish consumption advisory (DDT metabolites, toxaphene and chlordane in fish), and low dissolved oxygen.

Surface Water	Reach or Lake Number	Pollutant of Concern Removed From List	Criteria For Delist	Delist Surface Water
Little Colorado - San Juan Watershed				
Little Colorado River Water Canyon Creek - Nutrioso Creek	AZ15020001-010	Turbidity	1 - TMDL approved in 2002. Moved to the Planning List.	Yes.
Little Colorado River Nutrioso Creek - Carnero Wash	AZ15020001-009	Turbidity	1 - TMDL approved in 2002. Moved to the Planning List.	Yes.
Middle Gila Watershed				
French Gulch headwaters - Hassayampa River	AZ15070103-239	Manganese	3 - Change in standard. Data shows that new standard is attained.	No. Remains on list due to cadmium, copper and zinc.
Gila River Centennial Wash - Gillespie Dam	AZ15070101-008	Turbidity	3 - Change in standard. Moved to the Planning List.	No. Remains on list due to fish consumption advisory (DDT metabolites, toxaphene and chlordane in fish), boron, and selenium.
Hassayampa River headwaters - Copper Creek	AZ15070103-007A	Zinc	1 - TMDLs for cadmium, copper, and zinc approved in 2002. (Cadmium and copper were delisted in 2002; however, TMDLs had already been drafted.) Moved to the Planning list.	Yes.
Mineral Creek Devils Canyon - Gila River	AZ15050100-012B	Beryllium	3 - Change in standard. Data shows that new standard is attained.	No. Remains on list due to copper and selenium.
		pH	2 - Current data indicates uses are being attained. (Remediation activities removing contaminants.)	
		Zinc	2 - Current data indicates uses are being attained. (Remediation activities removing contaminants.)	
Turkey Creek headwaters - tributary at 34 19 28 / 112 21 28	AZ15070102-036A	Cadmium	6 - Reach was split in 2002 due to changes in designated uses at 5000-foot elevation. All exceedances that resulted in a listing occurred in the lower reach (AZ15070102-036B).	Yes.
		Copper		
		Zinc		
Salt River Watershed				
Christopher Creek headwaters - Tonto Creek	AZ15060105-353	Turbidity	3 - Change in standard. Moved to Planning List.	No. Remains on list due to <i>Escherichia coli</i> .
Tonto Creek headwaters - unnamed tributary at 34 18 10 / 111 04 14	AZ15060105-01 3A	Turbidity	3 - Change in standard. Moved to Planning List.	Yes.
Tonto Creek unnamed tributary at 34 18 10 / 111 04 14 - Haigler Creek	AZ15060105-013B	Turbidity	3 - Change in standard. Moved to Planning List.	Yes.
Tonto Creek Rye Creek - Gun Creek	AZ15060105-008	Turbidity	3 - Change in standard 2 - Current data shows no exceedances in 18 samples.	Yes.

Surface Water	Reach or Lake Number	Pollutant of Concern Removed From List	Criteria For Delist	Delist Surface Water
San Pedro - Willcox Playa - Rio Yaqui Watershed				
Mule Gulch headwaters - above Lavender Pit	AZ15080301-090A	pH	2. Current data shows low pH in only 1 of 10 samples, and no zinc exceedances in 15 samples.	No. Remains on the list due to copper.
		Zinc		
Santa Cruz - Rio Magdalena - Rio Sonoyta				
Alum Gulch headwaters - 31 28 20 / 110 43 51	AZ15050301-561A	Cadmium	1 - TMDLs approved in 2003. Moved to the Planning List.	Yes.
		Copper		
		pH		
		Zinc		
Alum Gulch 31 28 20 / 110 43 51 - 31 29 17 / 110 44 25	AZ15050301-561B	Cadmium	1 - TMDLs approved in 2003. Moved to the Planning List.	Yes.
		Copper		
		pH		
		Zinc		
Harshaw Creek headwaters - Sonoita Creek	AZ15050301-025	Zinc	3 - Designated use changed from A&Ww to A&We. Zinc data meet new ephemeral standards.	Yes.
Nogales and East Nogales Washes Mexico border - Potrero Creek	AZ15050301-011	Fecal coliform	2 - Change in standard. Now listed due to <i>Escherichia coli</i> exceedances.	No. Remains on list due to ammonia, chlorine, copper, and <i>Eshcherichia coli</i> .
		Turbidity	3 - Change in standard. Moved to Planning List.	
Potrero Creek Interstate 19 - Santa Cruz River	AZ15050301-500B	Fecal coliform	3 - Change in standard. Meeting new <i>Escherichia coli</i> standards. (No exceedance in 15 samples.)	Yes.
Santa Cruz River Mexico border - Nogales WWTP	AZ15050301-010	Fecal coliform	3 - Change in standard. Now listed due to <i>Escherichia coli</i> exceedances.	No. Remains on list due to <i>Eshcherichia coli</i> .
Santa Cruz River Nogales WWTP - Josephine Canyon	AZ15050301-009	Fecal coliform	3 - Change in standard. Meeting new <i>Escherichia coli</i> standards. (No exceedance in 15 samples.)	Yes.
Santa Cruz River Josephine Canyon - Tubac Bridge	AZ15050301-008A	Fecal coliform	3 - Change in standard. Meeting new <i>Escherichia coli</i> standards. (No exceedance in 16 samples.)	Yes.
		Turbidity	3 - Change in standard. Moved to the Planning List.	
Santa Cruz River Tubac Bridge - Sopori Wash	AZ15050301-008B	Fecal coliform	3 - Change in standard. Meeting new <i>Escherichia coli</i> standards. (No exceedance in 17 samples.)	Yes.
Three R Canyon headwaters - 31 28 35 / 110 46 19	AZ15050301-558A	Cadmium	1 - TMDLs approved in 2003. Moved to the Planning List.	Yes.
		Copper		
		pH		

Surface Water	Reach or Lake Number	Pollutant of Concern Removed From List	Criteria For Delist	Delist Surface Water
		Zinc		
Three R Canyon 31 28 35 / 110 46 19 - 31 28 27 / 110 47 12	AZ15050301-558B	Cadmium	1 - TMDLs approved in 2003. Moved to the Planning List.	Yes.
		Copper		
		pH		
		Zinc		
Three R Canyon 31 28 27 / 110 47 12 - Sonoita Creek	AZ15050301-558C	Cadmium	1 - TMDLs approved in 2003. Moved to the Planning List.	Yes.
		Copper		
		pH		
		Zinc		
Upper Gila Watershed				
Gila River Bonita Creek - Yuma Wash	AZ15040005-022	Turbidity	3 - Change in standard. Moved to the Planning List.	No. Remains on list due to <i>Escherichia coli</i> .
San Francisco River Limestone Gulch - Gila River	AZ15040004-001	Turbidity	3 - Change in standard. Moved to the Planning List.	Yes.
Verde Watershed				
Beaver Creek Dry Beaver Creek - Verde River	AZ15060202-002	Turbidity	3 - Change in standard. Moved to the Planning List.	Yes.
Granite Basin Lake	AZL15060202-0580	Dissolved oxygen	5 - Low dissolved oxygen due to natural conditions only (lake turnover).	Yes.
Oak Creek Below Slide Rock State Park - Dry Creek	AZ15060202-018B	Turbidity	3 - Designated use changed from A&Wc to A&Ww because reach is below 5000-foot elevation. Current and historic turbidity data would meet former turbidity standard for A&Ww.	Yes.

Which TMDLs will ADEQ do next?

Priority Ranking and Scheduling TMDLs – The Clean Water Act and federal regulations (40 CFR 130.7) require the state to establish a priority ranking for each surface water on the 303(d) List. The criteria for this ranking and which TMDLs will be targeted for initiation within the next two years is established in the Impaired Waters Rule (R18-11-606) (**Appendix B**). Arizona's ranking system reflects the relative value and benefits of each surface water to the state and considers, among other factors:

1. The severity of the impairment in relation to the designated uses, especially threats to human health, aquatic life and wildlife;
2. Surface waters where endangered or threatened species exist and the pollutant is likely to further jeopardize the listed species;
3. Other pertinent information such as: economic or aesthetic importance, the complexity of the TMDL, degree of public interest, permitting issues, an impending change in water quality standard or designated use, and date when the surface water was first placed on the 303(d) List.

Specific factors considered in prioritizing and scheduling impaired surface waters for TMDL development are listed as footnotes at the end of **Table 31**. As a surface water may have a mixture of high, medium, and low priority factors, the final priority ranking considers all factors but weighs some factors more heavily than others. The TMDL schedule in **Table 31** also indicates which factors were applied, which were weighed more heavily, and a brief discussion of the final priority ranking determination.

In general, the surface water was automatically listed as high priority, and ADEQ will initiate development of the associated TMDL within two years following EPA's approval of the 303(d) List, if there is a substantial threat to health and safety of humans, aquatic life, or wildlife. This determination was based on the following four factors:

1. The magnitude of the exceedance. For example, the laboratory result was more than twice the standard.
2. The duration or persistence of the problem. For example, more than half the samples exceeded standards.
3. The standard was established to protect human health or wildlife from imminent harm. For example, the acute toxic Aquatic and Wildlife standards were established based on short-term exposures rather than long-term or life-time exposures.
4. A Threatened or Endangered species may be further jeopardized by the water

quality problem. This was determined by using the following information provided by the Arizona Game and Fish Department and the US Fish and Wildlife Service:

- A federally-protected Threatened or Endangered species has been confirmed within a mile of the surface water listed or the surface water is within "critical habitat" established for the species;
- A standard to protect aquatic and wildlife has been exceeded; and
- Published reasons for decline and vulnerability of the species or other published reports indicate that the pollutant or source of the exceedance may further jeopardize this species.

Some low priority factors take precedence over high priority factors when completing a TMDL at this time would either not be appropriate, be premature, or be an inefficient use of resources. These factors included:

1. ADEQ has formally submitted to EPA a proposal to delist the surface water or pollutant.
2. ADEQ has adopted a new surface water quality standard or designated use that is currently being reviewed by EPA for approval. When approved, the standard would no longer be violated.
3. The surface water is expected to attain surface water quality standards before the next listing cycle due to:
 - Recently instituted treatment levels or best management practices in the drainage area,
 - Discharges or activities related to the impairment have ceased, or
 - Actions have been taken and the controls are in place or firmly scheduled for implementation that are likely to bring the surface water back into compliance.
4. The water quality problem can be resolved only through the cooperative actions of an agency outside the state or federal jurisdiction (e.g., Mexico, another state, or Indian reservation).

EPA may also revise this schedule during its review process. Or it may become necessary to shift priority ranking of a surface water due to significant changes in resources to complete TMDLs or new information obtained concerning one of the priority factors. Such changes would be negotiated with EPA and would be made known to the public through the TMDL status page on ADEQ's web site: www.azdeq.gov.

**Table 31. TMDL priority ranking and schedule
for ADEQ 303(d) listings (see EPA listings in Table 32 to follow)**
(See key to priority factors on p. 46)

Surface Water Identification	Pollutant	Year First Listed	H 1	H 2	H 3	H 4	H 5	H 6	H 7	H 8	M 1	M 2	M 3	M 4	M 5	M 6	L 1	L 2	L 3	L 4	L 5	L 6	L 7	L 8	L 9	RANKING	TIME TABLE **	
Bill Williams Watershed																												
Alamo Lake 1,414 acres AZL15030204-0040	Mercury (in fish tissue)	1998 (2002 EPA)	H 1			H 4			H 7						M 5	M 6							L 6				High priority	Initiated monitoring and investigation in 2003. Initiate TMDL in 2004. Complete TMDL in 2005.
			Excess mercury in fish tissue can be toxic to humans and other animals that eat the fish (H1). Fish in this lake are a food source for the bald eagle (a species federally-listed as Threatened) (H4) and the lake supports significant sport fishing (H7). ADEQ will be coordinating research for potential mercury sources for the five mercury listings in this watershed as they may have common sources (M5, M6). Currently there is insufficient data to determine sources or critical conditions (L8).																									
	Ammonia	2004						H 7								M 6							L 6				Medium priority	Ongoing monitoring by US Fish and Wildlife Service. Initiate monitoring and investigation in 2007. Initiate TMDL in 2008. Complete TMDL in 2009.
	pH	1996						H 7		M 1						M 8											Medium priority	
ADEQ is currently establishing criteria to classify its lakes which may result in changes in assessment status (M6). Classification is to be completed by 2004. High ammonia and pH levels may indicate eutrophication problems that may lead to fish kills at this popular fishing area (H7). The elevated ammonia and pH should <u>not</u> negatively impact the bald eagles located near this lake (a species that is federally-listed as Threatened). More investigation is needed to determine the source of the pollutants (L6). Although ammonia could pose a significant threat to aquatic life due to its toxic nature, the chronic ammonia standard was exceeded in only 2 of 36 sampling events. The pH level exceeds standard for A&Ww, FBC, and AgL (M1).																												
Colorado-Grand Canyon Watershed																												
Colorado River Parashant Canyon - Diamond Creek 28 miles AZ15010002-003	Selenium	2004													M 5								L 6		L 8		Low priority	Ongoing fixed station monitoring by USGS. Initiate monitoring and investigation in 2010. Initiate TMDL in 2011. Complete TMDL in 2012.
	Suspended Sediment Concentration	2004													M 5								L 6		L 8		Low priority	
			Prior monitoring and investigations should help support TMDL development; however, further investigation is needed to determine source loadings, especially contributions from natural background (L6, L8). Source contributions from Utah, Colorado, and other upstream states may make completion of this TMDL more complex (M5). Two federally protected species occur in this area, the humpback chub and razorback sucker, but should <u>not</u> be negatively impacted by the suspended sediment or relatively low levels of selenium.																									
Paria River Utah border - Colorado River 29 miles AZ14070007-123	Suspended Sediment Concentration	2004													M 5								L 6		L 8		Low priority	Initiate monitoring and investigation in 2010. Initiate TMDL in 2011. Complete TMDL in 2012.
			Prior monitoring and investigations in this drainage should help support TMDL development (M6); however, further investigation is needed to determine source loadings, especially contributions from natural background (L6, L8). Source contributions from Utah may make completion of this TMDL more complex (M5).																									
Virgin River Beaver Dam Wash - Big Bend Wash 10 miles AZ15010010-003	Selenium	2004													M 5	M 6							L 6		L 8		Medium priority	Ongoing fixed station monitoring by USGS. Initiate monitoring and investigation in 2009. Initiate TMDL in 2010. Complete TMDL in 2011.
	Suspended Sediment Concentration	2004													M 5	M 6							L 8		L 8		Medium priority	
			Prior monitoring in this drainage should help support TMDL development (M6); however, further investigation is needed to determine source loadings, especially contributions from natural background (L6, L8). Source contributions from Utah may make completion of this TMDL more complex (M5). Federally protected Virgin River chub and woundfin occur in this area, but should <u>not</u> be negatively impacted by the elevated selenium and suspended sediment concentrations. For efficiency, the development of selenium TMDLs in the Colorado River and the Virgin River will be coordinated (M6).																									

Surface Water Identification	Pollutant	Year First Listed	H 1	H 2	H 3	H 4	H 5	H 6	H 7	H 8	M 1	M 2	M 3	M 4	M 5	M 6	L 1	L 2	L 3	L 4	L 5	L 6	L 7	L 8	L 9	RANKING	TIME TABLE **	
Colorado-Lower Gila Watershed																												
Colorado River Hoover Dam - Lake Mohave 40 miles AZ15030101-015	Selenium	2004				H 4										M 5	M 6						L 6		L 8		High priority	Ongoing fixed station monitoring by USGS. Initiate monitoring and investigation in 2009. Initiate TMDL in 2010. Complete TMDL in 2011.
	The federally protected Yuma clapper rail occurs in this area and could be negatively impacted by elevated lead or selenium (H4). Prior monitoring in this drainage should help support TMDL development (M6); however, further investigation is needed to determine source loadings, especially contributions from natural background (L6, L8). Note that significant selenium loadings may be contributed from upstream sources in Utah and Colorado and may make completion of the TMDL more complex (M5).																											
Gila River Coyote Wash - Fortuna Wash 28 miles AZ15070201-003	Boron	2004							H 7							M 5	M 6						L 5	L 6			High priority	Ongoing fixed station monitoring. Initiate monitoring and investigation in 2006. Initiate TMDLs in 2007. Complete TMDLs in 2008.
	Selenium	2004				H 4										M 5	M 6							L 6				
The federally protected Yuma clapper rail have been found in this surface water and could be negatively impacted by elevated selenium (H4). Elevated selenium and boron may be associated with the extensive agriculture in the area; however, TMDL may be complex due to large number of potential sources and potential seasonal influences (M3, M5, L6). Boron concentrations found may impact downstream agricultural uses (H7) but present a low ecological and human health risk (L5). Coordinate TMDL investigations with boron and selenium investigation upstream, from Centennial Wash to Gillespie Dam (M6).																												
Painted Rocks Borrow Pit Lake 180 acres AZL15070201-1010	Low dissolved oxygen	1992																				L 4	L 5			L 8	Low priority	Lakes classification study will be completed in 2004 and will determine need for TMDL.
	A 1992 diagnostic feasibility study by ADEQ suggested the causes of low dissolved oxygen were due to design and maintenance problems on this shallow lake and suggested strategies to improve water quality. Drought conditions have reduced lake levels and may be related to some of the low dissolved oxygen readings (L8). During the past year, the lake has been dry and representative water samples at the lake could not be collected (L4). The lake is no longer being stocked with fish and does not have recreational uses because of historic pesticide contamination and fish consumption advisories (L5).																											
	DDT metabolites, toxaphene, chlordane in fish tissue	1988 (EPA 2002)	H 1				H 4									M 5	M 6							L 6			High priority	Initiate monitoring and investigation in 2008. Initiate TMDLs in 2009. Complete TMDLs in 2010.
	The federally protected Yuma clapper rail occurs in this area and could be negatively impacted by pesticides (H4). There is no public access, thus the public health risk due to fish tissue contamination is significantly reduced; however, these pesticides still present a high risk to aquatic life and species that prey on them (H1). The TMDLs will be complex due to the size of the drainage and potential sources (M5) and will require significant monitoring resources to determine the sources of this historic pesticide (L6). TMDLs will be coordinated with related pesticide TMDLs in the Middle Gila (M6).																											
Little Colorado-San Juan Watershed																												
Little Colorado River Silver Creek - Carr Wash 6 miles AZ15020002-004	Escherichia coli	2004	H 1												M 3		M 5	M 6						L 6			Medium priority	Initiate monitoring and investigation in 2005. Initiate TMDL in 2006. Complete TMDL in 2007.
	Exceedances of the Escherichia coli standard may represent a significant public health concern if people are swimming or even wading in the water (H1). Exceedances may be related to wet weather events (M3). The drainage area is more than 8,000 square miles so determining the source of contamination may be complex and will require substantial monitoring data to identify sources (M5, L6). ADEQ will initiate this monitoring while it collects data for other TMDLs along the Little Colorado River (M6).																											
Little Colorado River Porter Tank Draw - McDonalds Wash 17 miles AZ15020008-017	Copper	1992	H 1				H 4									M 5								L 6		L 8	High priority	Initiate monitoring and investigation in 2005. Initiate TMDL in 2007. Complete TMDL in 2009.
	Silver	1992	H 1				H 4									M 5									L 6		L 8	

Surface Water Identification	Pollutant	Year First Listed	H 1 *	H 2	H 3	H 4 *	H 5	H 6	H 7	H 8	M 1	M 2	M 3	M 4	M 5	M 6	L 1 *	L 2 *	L 3 *	L 4	L 5	L 6	L 7 *	L 8	L 9	RANKING	TIME TABLE **	
	Suspended + Sediment Concentration	2004													M 5								L 6				Medium priority	Initiate monitoring and investigation in 2005. Initiate TMDL in 2007. Complete TMDL in 2009.
			Copper and silver TMDLs are a high priority due to the toxic nature of these heavy metals and the frequency of exceedances (9 out of 11 samples exceeded the copper standard, and 2 out of 9 samples exceeded the silver standard) (H1). Little Colorado spinedace, federally protected as a Threatened species, occurs in this reach and may be negatively impacted by the copper and silver (H4), but should <u>not</u> be negatively impacted by the suspended sediment concentration. Data from a USGS study concluded that the metals may be naturally elevated (L8); however, sources and natural loading concentrations need to be further studied (L6). The nature of these pollutants make this study very complex (M5). The current sampling plan for copper and silver will be updated to include SSC.																									
Lake Mary (lower) 660 acres AZL15020015-0890 Lake Mary (upper) 760 acres AZL15020015-0900	Mercury (in fish tissue)	2002 (EPA)	H 1						H 7						M 5	M 6							L 6				High priority	ADEQ initiated TMDL monitoring and investigation in 2003. Initiate TMDL in 2005. Complete TMDL in 2006.
Fish consumption advisory has been issued. Excess mercury in fish tissue can be toxic to humans and other animals that eat the fish (H1). Normally the lake is a significant public recreational area (H7); however, due to a long drought, the lake has been dry at times during the past year. Intermittent stream flow and drought conditions have slowed collection of adequate data to determine source loadings (L6). Excessive mercury in fish tissue has been found in numerous regional lakes. Because the extent of impairment and sources of loading have not been determined, and may have natural and/or airborne sources, this TMDL is complex and a high priority (M5, M6, L8).																												
Middle Gila Watershed																												
Alvord Park Lake 27 acres AZL15060106B-0050	Ammonia	2004	H 1						H 7							M 6							L 6				High priority	Initiate monitoring and investigation in 2007. Initiate TMDL in 2008. Complete TMDL in 2009.
			Ammonia poses a significant threat to aquatic life due to its toxic nature (H1). This lake is an important urban recreational area (H7). More investigation is needed to determine the source of the pollutants (L6). ADEQ is currently establishing criteria to classify its lakes which may result in changes in assessment status (M6).																									
Chaparral Lake 13 acres AZL15060106B-0300	Low dissolved oxygen	2004							H 7							M 6							L 6				Medium priority	Initiate monitoring and investigations in 2007. Initiate TMDLs in 2008. Complete TMDLs in 2009.
	Escherichia coli	2004							H 7							M 6							L 6				Medium priority	
	Although exceedances of <i>Escherichia coli</i> standards represent a risk to public health, swimming or wading in the lake is prohibited. Low dissolved oxygen, which may result in fish kills, would be detrimental to this important urban recreational area (H7). More investigation is needed to identify the sources loadings (L6). Both TMDLs in this lake will be developed at the same time for efficiency (M6). ADEQ is currently establishing criteria to classify its lakes which may result in changes in assessment status (M6).																											
Cortez Park Lake 2 acres AZL15060106B-0410	Low dissolved oxygen	2004							H 7		M 1					M 6							L 6				Medium priority	Initiate monitoring and investigations in 2007. Initiate TMDLs in 2008. Complete TMDLs in 2009.
	pH	2004							H 7		M 2					M 6							L 6					
	ADEQ is currently establishing criteria to classify its lakes, which may result in changes in assessment status (M6). For efficiency, Both TMDLs will be developed at the same time (M6). Low dissolved oxygen, which may result in fish kills, would be detrimental to this important urban recreational area (H7). More investigation is needed to identify the sources of pollutants causing these water quality problems (L6).																											

Surface Water Identification	Pollutant	Year First Listed	H 1 *	H 2	H 3	H 4 *	H 5	H 6	H 7	H 8	M 1	M 2	M 3	M 4	M 5	M 6	L 1 *	L 2 *	L 3 *	L 4	L 5	L 6	L 7 *	L 8	L 9	RANKING	TIME TABLE **
French Gulch headwaters-Hassayampa River 10 miles AZ15070103-239	Copper	1994	H 1										M 3		M 5	M 6						L 6				High priority	TMDL study ongoing. Completion TMDL in 2004.
	Zinc	1994	H 1										M 3		M 5	M 6						L 6					
	Cadmium	2004											M 3		M 5	M 6				L 4		L 6				Medium priority	
	Although this reach is intermittent, the toxic nature of copper and zinc, along with the magnitude and duration of exceedances, pose a significant threat to wildlife which may drink pools remaining after monsoon rains or winter storms (H1): * Dissolved copper was measured as high as 1200 µg/L (almost 20 times the aquatic and wildlife standard), and exceeded the standards in 80 of 135 samples (60%); * Dissolved zinc was measured as high as 2260 µg/L (almost 6 times the aquatic and wildlife standard), and exceeded standards in 36 of 170 samples (20%). Although the cadmium can be a significant threat to aquatic and wildlife uses, the chronic standard was only exceeded on this intermittent reach in only 3 of 50 sampling events (L4). For efficiency, all three TMDLs will be developed at the same time and a scheduled for 2003-2004 (M6); however, the TMDL is expected to be very complex due to the nature of the pollutants (M5) and seasonal variation (M3). Intermittent stream flow and drought conditions will slow collection of adequate data to determine source loadings (L6).																										
Gila River Centennial Wash-Gillespie Dam 5 miles AZ15070101-008	Boron	1992							H 7				M 3		M 5							L 6				Medium priority	Initiate monitoring and investigation in 2006. Initiate TMDL in 2007. Complete TMDL in 2008.
	Selenium	2004				H 4			H 7				M 3		M 5							L 6				High priority	
	The federally protected Yuma clapper rail and Southwest willow flycatcher have been found in this surface water and could be negatively impacted by elevated selenium (H4). Elevated selenium and boron may be associated with the extensive agriculture in the area; however, TMDL may be complex due to large number of potential sources and potential seasonal influences (M3, M5, L6). Boron concentrations found may impact downstream agricultural uses (H7) but present a low ecological and human health risk (L5). Coordinate TMDL investigations with boron and selenium investigation downstream, from Coyote Wash to Fortuna Wash (M6).																										

Surface Water Identification	Pollutant	Year First Listed	H 1	H 2	H 3	H 4	H 5	H 6	H 7	H 8	M 1	M 2	M 3	M 4	M 5	M 6	L 1	L 2	L 3	L 4	L 5	L 6	L 7	L 8	L 9	RANKING	TIME TABLE **	
Turkey Creek unnamed tributary at 34 19 28 / 112 21 28 - Poland Creek 30 miles AZ15070102-036	Cadmium	1992	H 1			H 4		H 6					M 3	M 4	M 5	M 6						L 6				High priority	TMDL study ongoing. Anticipate completing TMDLs in 2004.	
	Copper	1992	H 1			H 4		H 6					M 3	M 4	M 5	M 6						L 6						
	Lead	2004				H 4		H 6					M 3	M 4	M 5	M 6				L 4		L 6						
	Zinc	1992	H 1			H 4		H 6					M 3	M 4	M 5	M 6						L 6						
Cadmium, copper, and zinc pose a significant threat to wildlife due to the toxic nature of these pollutants, and the magnitude and frequency of exceedances as follows (H1): * Dissolved cadmium was measured as high as 931 µg/L (8 times the standard), and exceeded standards in 2 of 5 samples (40%); * Dissolved copper was measured as high as 13,600 µg/L (200 times the standard) and exceeded standards in 3 of 5 samples (60%); * Dissolved zinc was measured as high as 158,000 µg/L (more than 400 times the standard) and exceeded standards in 3 out of 5 samples. Although chronic lead can be a significant threat to aquatic and wildlife, the chronic standard was only exceeded in 2 of 7 samples and at relatively low concentrations on this intermittent reach (L4). The federally protected Gila topminnow occurs in this reach and could be negatively impacted by elevated metals in the water (H4). The Forest Service is supporting the development of this TMDL and is developing plans to remediate mine waste piles along this reach (H6, M4). The TMDL investigation is on ADEQ's 2003-2004 work plan (M6) but is complex due to the nature of metals and the length of the listed stream segment (21 miles). Metals contamination may be localized, exceedances are storm dependent. (M3, M5). Intermittent stream flow and drought conditions have slowed collection of adequate data to determine source loadings (L6).																												
Salt Watershed																												
Canyon Lake 450 acres AZL15060106A-0250	Low dissolved oxygen	2004							H 7				M 3			M 6						L 6				Medium priority	Initiate monitoring and investigation in 2007. Initiate TMDL in 2008. Complete TMDL in 2009.	
			This lake is an important recreational area (H7). Low dissolved oxygen may be related to seasonal activities (M3). More data are needed to identify sources (L6). ADEQ is currently establishing criteria to classify its lakes, which may result in changes in assessment status (M6).																									
Christopher Creek headwaters-Tonto Creek 8 miles AZ15060105-353	Escherichia coli	2004	H 1						H 7				M 3			M 6						L 6				High priority	Ongoing TMDL investigation. TMDL to be completed in 2004.	
			Exceedances of the Escherichia coli standard indicate a risk to public health (H1). Portions of this stream receive extensive recreational use (H7). Exceedances appear to be seasonal (M3), but more data are needed to identify sources (L6). TMDL is being completed in conjunction with Tonto Creek TMDLs (M6).																									
Crescent Lake 157 acres AZL15060101-0420	pH	2002							H 7		M 1					M 6						L 6				Medium priority	Initiate monitoring and investigation in 2007. Initiate TMDL in 2008. Complete TMDL in 2009.	
			ADEQ is currently establishing criteria to classify its lakes, which may result in changes in assessment status (M6). This lake is an important fishing area and high pH levels may be associated with fish kills (last reported fish kill was in 1996) (H7). More monitoring data are needed to identify pollutants causing the high pH and sources of the pollutants (L6).																									

Surface Water Identification	Pollutant	Year First Listed	H 1 *	H 2	H 3	H 4 *	H 5	H 6	H 7	H 8	M 1	M 2	M 3	M 4	M 5	M 6	L 1 *	L 2 *	L 3 *	L 4	L 5	L 6	L 7 *	L 8	L 9	RANKING	TIME TABLE **	
Pinto Creek Ripper Spring - Roosevelt Lake 18 miles AZ15060103-018C	Copper	2004				H 4		H 6								M 6						L 6				High priority	Phase II copper TMDL monitoring initiated in 2000 (on upstream reach). Initiate TMDL in 2004. Complete TMDL in 2005.	
	Selenium	2004				H 4		H 6														L 6				High priority	Initiate monitoring and investigation in 2007. Initiate TMDL in 2008. Complete TMDL in 2009.	
	The federally protected Colorado pikeminnow and bald eagles both occur in this area and could be negatively impacted due to elevated copper or selenium (H4). There is wide public support for development of TMDLs in Pinto Creek (H6). A Phase II copper TMDL conducted in the segment above this reach will be expanded to include this reach of Pinto Creek (M6). More data are needed to identify copper sources in this lower reach (L6).																											
Salt River Stewart Mountain Dam - Verde River 10 miles AZ15060106A-003	Low dissolved oxygen	2004							H 7				M 3									L 6				Medium priority	Initiate monitoring and investigation in 2007. Initiate TMDL in 2008. Complete TMDL in 2009.	
	Copper	2004							H 7													L 6				Medium priority		
	Although exceedances of the chronic copper standard can be a significant threat to aquatic and wildlife, chronic standards were only exceeded in 3 of 81 sampling events. Low dissolved oxygen may be seasonal (M3). This section of the Salt River is an important recreational area (H7). More data are needed to identify potential sources of the copper and low dissolved oxygen (L6). The federally protected Yuma clapper rail and bald eagle should <u>not</u> be negatively impacted by the low dissolved oxygen or elevated copper.																											
San Pedro-Willcox Playa-Rio Yaqui Watershed																												
Mule Gulch (3 reaches) 1. headwaters - above Lavender Pit 4 miles AZ15080301-090A 2. above Lavender Pit - Bisbee WWTP 1 miles AZ15080301-090B 3. Bisbee WWTP - Highway 80 bridge 4 miles AZ15080301-090C	Copper (090A, 090B, + 090C)	1990	H 1										M 3		M 5	M 6						L 6		L 8		Medium priority	Ongoing TMDL investigation and monitoring. Site-specific standard development to be completed in 2004. Complete TMDL in 2005.	
	Cadmium (090C)	2004	H 1										M 3		M 5	M 6						L 6		L 8				
	pH (090B +090C)	1990	H 1								M 1		M 3		M 5	M 6						L 6		L 8				
	Zinc (090C)	1990	H 1										M 3		M 5	M 6						L 6		L 8				

Surface Water Identification	Pollutant	Year First Listed	H 1	H 2	H 3	H 4	H 5	H 6	H 7	H 8	M 1	M 2	M 3	M 4	M 5	M 6	L 1	L 2	L 3	L 4	L 5	L 6	L 7	L 8	L 9	RANKING	TIME TABLE **		
			<p>TMDLs are underway to address loadings on all three segments of Mule Gulch and tributaries contributing significant loading. These TMDLs are complex due to wastewater discharges and natural background levels of copper (M3, M5) and data for source loading is difficult to collect due to slope, intermittent and ephemeral flows, and lack of rain (L6, L8). Currently ADEQ is developing site specific standards that account for loadings from naturally occurring conditions (M6, L8). The TMDL is classified as a medium priority due to the time required for development of these standards.</p> <p>The mining operation in the affected segments is implementing and continuing to develop additional Best Management Practices to address contamination issues.</p> <p>Copper, zinc, and low pH present a significant threat to wildlife and human health (H1) due to the toxic nature of these pollutants and the magnitude and frequency of the exceedances:</p> <p>* Dissolved copper was as high as 12,000 µg/L (185 times the aquatic and wildlife standard) and exceeded standards in 20 of 36 samples (55%) in Mule Gulch;</p> <p>* Dissolved zinc was as high as 3760 µg/L (10 times the aquatic and wildlife standard) and exceeded standards in 14 of 36 samples (39%) in Mule Gulch;</p> <p>* This area is a documented corridor for Mexican migrant traffic. Migrants crossing Arizona's desert may drink from reaches of Mule Gulch with flow. Consumption of this water would be hazardous due to the high metal content.</p> <p>Note: drought has slowed sampling and the development of these TMDLs. (L6)</p>																										
San Pedro River Mexico border - Charleston 28 miles AZ15050202-008	Copper	2004														M 6							L 6	L 7		Medium priority	Initiate monitoring and investigation in 2005. Initiate TMDL in 2006. Complete TMDL in 2007.		
			For efficiency, copper TMDL will be coordinated with the <i>Escherichia coli</i> TMDLs in the upper San Pedro River (M6). More data are needed to identify potential sources of the copper (L6). This TMDL may be more complex due to potential sources in Mexico and uncertainty of timely coordination with international entities (L7). The federally protected Southwest Willow flycatcher found in this area should <u>not</u> be negatively impacted by the elevated copper.																										
San Pedro River Babocomari Creek - Dragoon Wash 17 miles AZ15050202-003	<i>Escherichia coli</i>	2004	H 1										M 3		M 5	M 6							L 6	L 7		Medium priority	Initiate monitoring and investigation in 2005. Initiate TMDL in 2006. Complete TMDL in 2007.		
			Exceedances of the <i>Escherichia coli</i> standard may represent a significant public health concern if people are swimming or even wading in the water (H1). Exceedances may be related to wet weather events (M3). The drainage area is relatively large and includes an area of Mexico, so determining the source of contamination may be complex and will require substantial monitoring data to identify sources (M5, L6, L7). Monitoring and investigation for the two reaches of the San Pedro River listed due to <i>Escherichia coli</i> will be coordinated (M6).																										
San Pedro River Dragoon Wash-Tres Alamos 16 miles AZ15050202-002	Nitrate	1990												M 4	M 5				L 6							Low priority	Ongoing Superfund Cleanup remediation activities and effectiveness monitoring in this area. Initiate monitoring for TMDL in 2010. Initiate TMDL in 2011. Complete TMDL in 2012.		
			The ADEQ WQARF (Superfund) Program is working with this site. The facility has instituted several actions to bring the surface and ground water into compliance with its standards and is conducting monthly monitoring of several sites along the San Pedro River (L3, M4). Although surface water quality is improving, cleanup will take time as there is significant contamination of the ground water which is seeping into the San Pedro (M5).																										
San Pedro River Aravampa Creek - Gila River 15 miles AZ15050203-001	<i>Escherichia coli</i>	2004	H 1										M 3		M 5	M 6							L 6	L 7		Medium priority	Initiate monitoring and investigation in 2005. Initiate TMDL in 2006. Complete TMDL in 2007.		
	Selenium	2004				H 4										M 5	M 6						L 6	L 7	L 8	High priority			
			Exceedances of the <i>Escherichia coli</i> standard may represent a significant public health concern if people are swimming or even wading in the water (H1). The federally protected bald eagle and the Southwest willow flycatcher found in this area may be negatively impacted by the elevated selenium (H4). <i>E. coli</i> exceedances may be related to wet weather events (M3). Prior monitoring and investigations should help support TMDL development; however, the drainage area is relatively large and includes an area of Mexico, so determining the source of contamination may be complex and will require substantial monitoring data to identify sources and natural background contributions (M5, L6, L7, L8). Monitoring and investigation for the two reaches of the San Pedro River listed due to <i>Escherichia coli</i> will be coordinated (M6).																										

Surface Water Identification	Pollutant	Year First Listed	H 1	H 2	H 3	H 4	H 5	H 6	H 7	H 8	M 1	M 2	M 3	M 4	M 5	M 6	L 1	L 2	L 3	L 4	L 5	L 6	L 7	L 8	L 9	RANKING	TIME TABLE **	
Santa Cruz-Rio Magdalena-Rio Sonoyta Watershed																												
Lakeside Lake 15 acres AZL15050302-0760	Low dissolved oxygen	2004		H 2					H 7				M 3			M 6											High priority	Ongoing monitoring and investigation. TMDL will be completed in 2004.
	Ammonia	2004		H 2					H 7				M 3			M 6											High priority	
	An AZPDES permit revision is pending for a discharge to this lake (H2, M6). Low dissolved oxygen and elevated ammonia are related to historic fish kills at this lake, and the lake is an important urban recreational area (H7). Low dissolved oxygen and elevated ammonia may be related to seasonal activities (M3). Reclaimed water and storm water inputs make this TMDL complex (M5).																											
Nogales & East Nogales Wash Mexico border-Portrero Wash 6 miles AZ15050301-011	Ammonia	2004											M 4			M 6							L 7			Medium priority	Ongoing quarterly monitoring. Necessity of TMDL will be based on outcome of current international discussions regarding upgrade of treatment facility.	
	Chlorine	1996											M 4			M 6							L 7			Medium priority		
	Copper	2004											M 4			M 6							L 7			Medium priority		
	Escherichia coli	1998	H 1											M 4			M 6							L 7				High priority
Exceedances of the Escherichia coli standard may represent a significant public health concern if people are swimming or even wading in the water (H1). Although ammonia, fecal coliform, chlorine are a significant threat to human health and wildlife (H1), actions to correct the situation are dependent on ongoing international negotiations between the U.S. government, Arizona, Mexico, the cities of Nogales, AZ and Nogales, Sonora, and the Mexican state of Sonora (L7, M4). Wastewater infrastructure in Mexico is badly deteriorated and must be replaced. Chlorine is sometimes added directly to the stream on the U.S. side of the border due to raw sewage overflows from Mexico. The source loadings are known and the technical means to correct the problem have been determined (M4). For efficiency, all four TMDLs will be developed at the same time (M6) if needed after facility upgrades.																												
Santa Cruz River Mexico border-Nogales WWTP 17 miles AZ15050301-010	Escherichia coli	2002	H 1					H 6														L 6	L 7			High priority	Stream has been dry due to drought in 2002-2003. TMDL monitoring will be initiated when flow resumes. Hope to initiate TMDL monitoring by 2006. Initiate TMDL by 2007. Complete TMDL by 2008. (Note: Long-term fixed station monitoring site at the border.)	
			Exceedances of the Escherichia coli standard may represent a significant public health concern if people are swimming or even wading in the water (H1). This area is a corridor for Mexican migrants who may consume this water while crossing the desert, although the water is not protected for this use (H1). The Friends of the Santa Cruz River, a volunteer monitoring group, is interested in maintaining high quality water in the Santa Cruz River (H6). Completing this TMDL may be complex due to probable sources in Mexico (L7), and intermittent stream flow and drought conditions will slow collection of adequate data to determine source loadings (L6).																									
Sonoita Creek 750 feet below WWTP - Santa Cruz River 14 miles AZ15050301-013C	Zinc	2004				H 4																L 6				High priority	Initiate monitoring and investigation 2006. Initiate TMDL in 2007. Complete TMDL in 2008.	
			The federally protected Gila topminnow occurs in this reach and could be negatively impacted by dissolved zinc (H4). Zinc exceedances just above standards; therefore, they do not represent a significant ecological health concern. Source of zinc is unknown (L6); however, a wastewater treatment plant is directly upstream from the monitoring site. Discharge monitoring reports from this treatment plant will be reviewed, and if needed, water quality improvements will be pursued through enforcement actions.																									

Surface Water Identification	Pollutant	Year First Listed	H 1 *	H 2	H 3	H 4 *	H 5	H 6	H 7	H 8	M 1	M 2	M 3	M 4	M 5	M 6	L 1 *	L 2 *	L 3 *	L 4	L 5	L 6	L 7 *	L 8	L 9	RANKING	TIME TABLE **	
Upper Gila Watershed																												
Cave Creek headwaters - South Fork of Cave Creek 8 miles AZ15040006-852A	Selenium	2004			H 3																	L 6		L 8		High priority	Initiate monitoring in 2005. Initiate TMDL in 2008. Complete TMDL in 2007.	
			This stream is classified as a Unique Water (H6). Further monitoring is needed to determine selenium source loading and contribution from natural sources (L6, L8).																									
Gila River Skullly Creek - San Francisco River 15 miles AZ15040002-001	Selenium	2004													M 5							L 6				Medium priority	Initiate monitoring and investigation in 2007. Initiate TMDL in 2008. Complete TMDL in 2009.	
			Monitoring and investigation is needed to determine potential sources of selenium (L6). Selenium may be contributed by sources in New Mexico, adding to the complexity of the TMDL (M5). Federally protected spikedace and loach minnow that occur in this area should <u>not</u> be negatively impacted by the elevated selenium.																									
Gila River Bonita Creek-Yuma Wash 6 miles AZ15040005-022	Escherichia coli	2004	H 1											M 3		M 5	M 6						L 6				Medium priority	Initiate monitoring and investigation in 2006. Initiate TMDL in 2007. Complete TMDL in 2008.
			Exceedances of the Escherichia coli standard may represent a significant public health concern if people are swimming or even wading in the water (H1). Exceedances may be related to wet weather events (M3). The drainage area is nearly 8,000 square miles, so determining the source of contamination may be complex and will require substantial monitoring data to identify sources (M5, L6). ADEQ will coordinate this investigation with the other E. coli TMDL downstream (M6).																									
Verde Watershed																												
East Verde River Ellison Creek - American Gulch 20 miles AZ15060203-022B	Selenium	2004																				L 6		L 8		Low priority	Ongoing fixed station monitoring. Initiate monitoring and investigation in 2010. Initiate TMDL investigation in 2011 Complete TMDL in 2012.	
			Further monitoring and investigation is needed to determine source loadings and contribution from natural sources (L6, L8) The federally protected Gila trout that occur in this area should <u>not</u> be negatively impacted by the slightly elevated selenium.																									
Verde River Bartlett Dam - Camp Creek 7 miles AZ15060203-004	Copper	2004			H 4			H 7														L 5	L 6			High priority	Initiate monitoring and investigation in 2007. Initiate TMDL in 2008. Complete TMDL in 2009.	
	Selenium	2004			H 4			H 7														L 5	L 6					
	The Federally protected razorback sucker and bald eagle occur in this area. The copper may negatively impact the razorback sucker and the selenium may negatively impact the bald eagle (H4). Although exceedances of the chronic copper and selenium standards can be a significant threat to aquatic life and wildlife, chronic standards were only exceeded in 4 of 80 copper sampling events and 4 of 23 selenium sampling events (L5). This section of the Salt River is an important recreational area (H7). More data are needed to identify potential sources of the copper and low dissolved oxygen (L6).																											
Whitehorse Lake 41 acres AZL15060202-1630	Low dissolved oxygen	2004						H 7								M 6							L 6				Medium priority	Monitoring and investigation initiated in 2001. Initiate TMDL in 2005. Complete TMDL in 2006.
			ADEQ is currently establishing criteria to classify its lakes which may result in changes in assessment status (M6). Classification is to be completed by 2004. Low dissolved oxygen may result in fish kills, and this lake is an important fishing area (H7). More investigation is needed to identify the sources of pollutants causing the low dissolved oxygen (L6).																									

X = Factor present. X = most significant factors. Note that factors that frequently out rank others are shown with an asterisk (*).

** Date shown is when action is to be initiated. Time table will be adjusted based on availability of flowing water, as Arizona is currently in a drought, and availability of resources to complete TMDLs.

High Priority Factors:

H1. Substantial threat to health and safety of humans, aquatic life, or wildlife based on:

- Number and type of designated uses impaired,
- Type and extent of risk from the impairment to human health or aquatic life,
- Pollutant causing the impairment, or
- Severity, magnitude, and duration the surface water quality standard was exceeded.

- H2. An new or modified individual NPDES or AZPDES permit is sought for discharge to the impaired water.
- H3. Surface water is listed as a Unique Water or is part of an area classified as a "wilderness area", "wild and scenic river" or other federal or state special protection of the water resource.
- H4. Surface water contains a species listed as "threatened" or "endangered" under the federal Endangered Species Act and the presence of the pollutant in the surface water is likely to jeopardize the listed species.
- H5. A delay in conducting the TMDL could jeopardize ADEQ's ability to gather sufficient credible data necessary to develop the TMDL.
- H6. There is significant public interest and support for development of a TMDL.
- H7. The surface water or segment has important recreational and economic significance to the public.
- H8. The pollutant has been listed for eight years or more (starting with the 2002 listing).

Medium Priority Factors:

- M1. The surface water fails to meet more than one designated use.
- M2. The pollutant exceeds more than one surface water quality standard.
- M3. The exceedance is correlated to seasonal conditions caused by natural events such as storms, weather patterns, or lake turnover.
- M4. Actions in the watershed may result in the surface water attaining applicable water quality standards; however, load reductions may take longer than the next 303(d) listing cycle.
- M5. The type of pollutant and other factors relating to the surface water or segment make the TMDL very complex.
- M6. ADEQ's administrative needs, including TMDL schedule commitments with EPA, permitting needs, or basin priorities that require completion of the TMDL.

Low Priority Factors:

- L1. ADEQ has formally submitted a proposal to delist the surface water or pollutant to EPA. If ADEQ makes the submission outside of listing process cycle, the change in priority ranking will not be effective until EPA approves the report.
- L2. ADEQ has modified or formally proposed a modification to the applicable surface water quality standard or designated use which would result in the surface water no longer being impaired, but the modification has not yet been approved by EPA.
- L3. The surface water is expected to attain surface water quality standards due to any of the following:
 - a. Recently instituted treatment levels or best management practices in the drainage area,
 - b. Discharges or activities related to the impairment have ceased, or
 - c. Actions have been taken and the controls are in place or scheduled for implementation that are likely to bring the surface water back into compliance.
- L4. The surface water is ephemeral or intermittent. ADEQ shall re-prioritize the surface water if the presence of the pollutant in the listed water poses a threat to the health and safety of humans, aquatic life, or wildlife using the water (H1) or the pollutant is contributing to the impairment of a downstream, perennial surface water.
- L5. The pollutant poses a low ecological and human health risk.
- L6. Insufficient data exist to determine the source of the pollutant load.
- L7. The uncertainty of timely coordination with national and international entities concerning international waters makes TMDL development complex.
- L8. Naturally occurring conditions are a major contributor to the impairment.
- L9. No documentation or effective analytical tools exist to develop a TMDL for the surface water with reasonable accuracy.

Table 32. TMDL priority ranking for waters added by EPA

Surface Water Identification	Pollutant	Ranking
Bill Williams Watershed		
Boulder Creek unnamed trib - Wilder Creek AZ15030202-006B	Mercury	Low
Boulder Creek Wilder Creek - Butte Creek AZ15030202-005A	Mercury	Low
Burno Creek Boulder Creek - Black Canyon AZ15030202-004	Mercury	Low
Coors Lake AZL15030204-5000	Mercury in fish tissue	Medium
Colorado - Grand Canyon Watershed (no additions)		
Colorado - Lower Gila Watershed (no additions)		
Little Colorado - San Juan Watershed		
Bear Canyon Lake AZL15020008-0130	pH	Low
Little Colorado River Silver Creek - Carr Wash AZ15020002-004 (see also priority for copper and silver in Table 30 above)	Sediment	Low
Long Lake AZL15020008-0820	Mercury in fish tissue	Medium
Lyman Lake AZL15020001-0850	Mercury in fish tissue	Medium
Soldier's Annex Lake AZL15020008-1430	Mercury in fish tissue	Medium
Soldier's Lake AZL15020008-1440	Mercury in fish tissue	Medium
Salt River Watershed		
Tonto Creek headwaters - unnamed tributary AZ15060105-013A	Dissolved oxygen Nitrogen	Medium
Tonto Creek unnamed tributary - Haigler Creek AZ15060105-013B	Nitrogen	Medium

San Pedro - Willcox Playa - Rio Yaqui Watershed		
Brewery Gulch Wildcat Canyon - Mule Gulch AZ15080301-337	Copper	Medium
Santa Cruz - Rio Magdalena - Rio Sonoyta Watershed		
Lakeside Lake AZL15050302-1260 (see also priority for dissolved oxygen and ammonia above)	Nitrogen Phosphorus Chlorophyll	High
Parker Canyon Lake AZL15050301-1040	Mercury in fish tissue	Medium
Rose Canyon Lake AZL15050302-1260	pH	Low
Upper Gila Watershed		
Gila River Bonita Creek - Yuma Wash AZ15040005-002 (see also priority for <i>E. coli</i> in Table 30 above)	Sediment	Low
San Francisco River headwaters - New Mexico border AZ15040004-023	Sediment	Low
Verde Watershed		
Granite Creek headwaters - Willow Creek AZ15060202-059A	Dissolved oxygen	Low
Watson Lake AZL15060202-1590	Nitrogen Dissolved oxygen pH	Medium



A large tailings pile, leftover from the now abandoned Golden Turkey Mine, lies along the stream bank of Turkey Creek. These tailings are considered to be major contributing sources of the cadmium, copper, lead, and zinc that impair this stream. TMDL investigations are ongoing on this reach of Turkey Creek, near Bumble Bee, Arizona.

VI. How Clean Is Surface Water in Arizona?

This chapter provides a statewide overview of the 2004 assessment. It is a summary of the individual surface water assessments provided in Chapter IV and V. These statistics are used by EPA in its published reports to Congress on the quality of water in the United States. The discussion and graphics in this section cannot be used to infer water quality in surface waters not assessed nor water on tribal lands in Arizona.

Water Quality in Streams, Canals, and Washes

For this assessment, 3,450 miles of streams, canals, and washes were assessed. Figure 27 below illustrates the overall stream assessments by category (note that Category 2, "attaining some uses" and Category 3, "inconclusive" from Chapter V have been combined as "inconclusive"). It should be noted that the number of streams assessed is a small percentage of the approximately 90,375 miles of streams in Arizona; however, it includes 77% of the state's perennial stream miles (2,721 of the estimated 3,530 perennial miles). The primary goal of ADEQ's Ambient Monitoring Program is to monitor and assess all of Arizona's

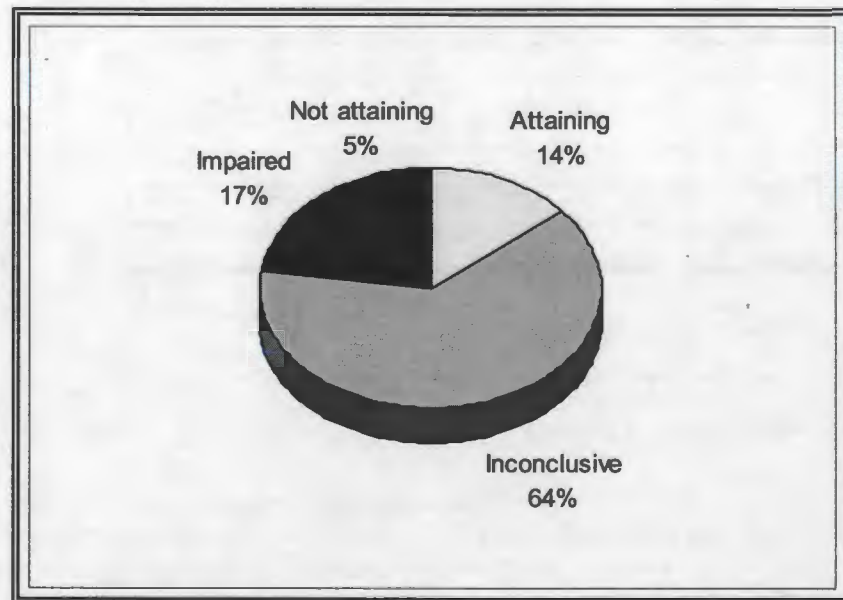


Figure 27. Overall use support - streams

perennial stream miles and the majority of those with extended intermittent flow. Streams with ephemeral flow (flow only in direct response to precipitation) are a challenge to monitor and take much more time for a full assessment to be made.

As illustrated Figure 28 below, relative use support is fairly consistent among all designated uses with the exception of Aquatic and Wildlife uses. For the fish consumption, body contact, domestic water source, and agricultural uses, approximately 40 - 60% are attaining the use, 40 - 60% are inconclusive and in need of further monitoring, and 5% or less are impaired or not attaining.

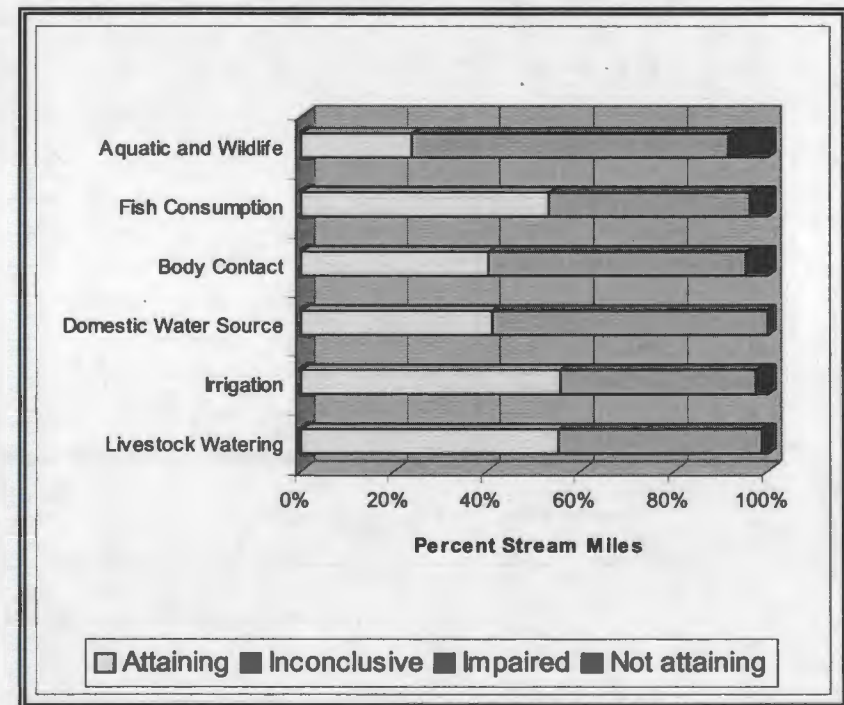


Figure 28. Support by designated use - streams

For the Aquatic and Wildlife designated uses, approximately 25% of the streams assessed are attaining, 60% inconclusive, and 15% impaired and not attaining. Overall, there are fewer streams attaining the use than in 2002. There are a couple of reasons for this change. This assessment was the first in which ADEQ made 303(d) listings for chronic A&W standards using the Impaired Water Identification Rule. Chronic standards are much more stringent than the acute standards. Acute standards are set higher to address short-term, usually lethal effects, while chronic standards are set lower to protect against long-term effects (such as reduced growth, survival and reproduction).

Additionally, because chronic standards are so much lower, it was often the case that laboratory analyses did not produce detection limits low enough to assess chronic standards (detection limit was higher than the standard), resulting in an assessment of "inconclusive."

Table 33. Use Support Summary – Streams Assessed in 2004

Designated Uses	Attaining (miles)	Inconclusive (miles)	Impaired (miles)	Not Attaining (miles)	Total Assessed (miles)
Overall Use Support	480	2,186	601	183	3,450
Aquatic and Wildlife	715	2,023	470	171	3,378
Fish Consumption	1,669	1,340	99	12	3,119
Body Contact	1,366	1,865	70	77	3,378
Domestic Water Source	257	367	0	0	624
Irrigation	1,061	799	34	11	1,904
Livestock Watering	1,662	1,309	3	35	3,006



This reach of the Agua Fria River, near Cordes Junction, Arizona, is attaining all of its designated uses.



An ADEQ staff member takes flow measurements on the Little Colorado River, near Springerville, Arizona. This reach is not attaining its uses due to turbidity exceedances. A TMDL has already been completed.

Water Quality in Lakes and Reservoirs

Of approximately 168,800 acres of perennial lakes or reservoirs in Arizona (not on Indian lands), 76,425 were assessed. The relative distribution of lake assessments by category is illustrated in **Figure 29** below. ADEQ's goal is to assess all perennial, publicly-owned lakes over the next two watershed cycles.

Of the lake acres assessed, approximately 94% were inconclusive and 6% impaired or not attaining. "Attaining" acres constitute only 220 (one lake) of the approximately 76,425 acres assessed, which is less than 1%. This percentage is rounded to "0%" in the graphic below. Many of the "inconclusive" lakes were simply lacking sufficient data to make a full assessment.

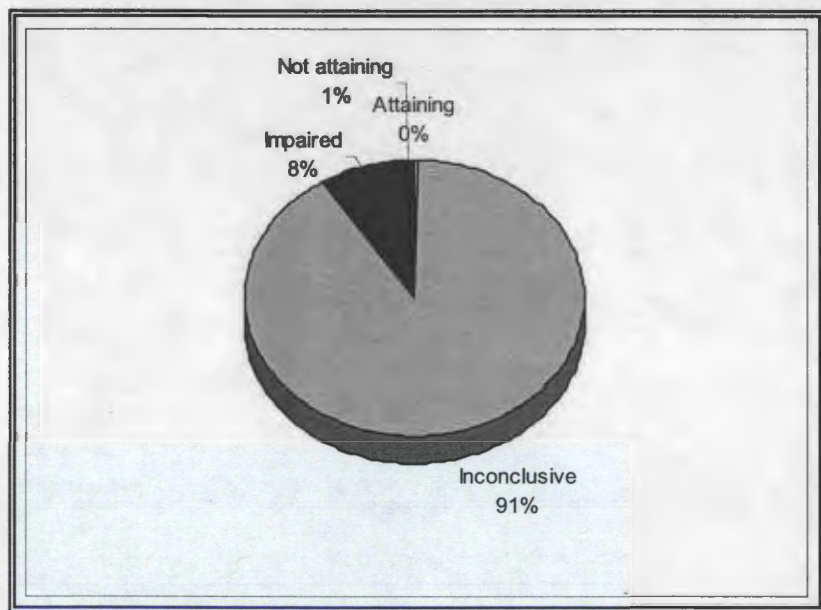


Figure 29. Overall use support - lakes

As illustrated in **Figure 30** below, the relative use support in lakes is consistent among Fish Consumption, Domestic Water Source, Irrigation, and Livestock Watering, with about 60% attaining, 30-40% inconclusive, and less than 5% impaired or not attaining. A larger percentage of lakes acres are inconclusive for the Aquatic and Wildlife use, mostly due to application of chronic standards, and a lot more "not attaining," due to a number of nutrient TMDLs completed that addressed the A&W use. The large percentage of inconclusive lake acres for the Body Contact uses (Full and Partial) is mostly due to a lack of *Escherichia coli* data needed to make an assessment.

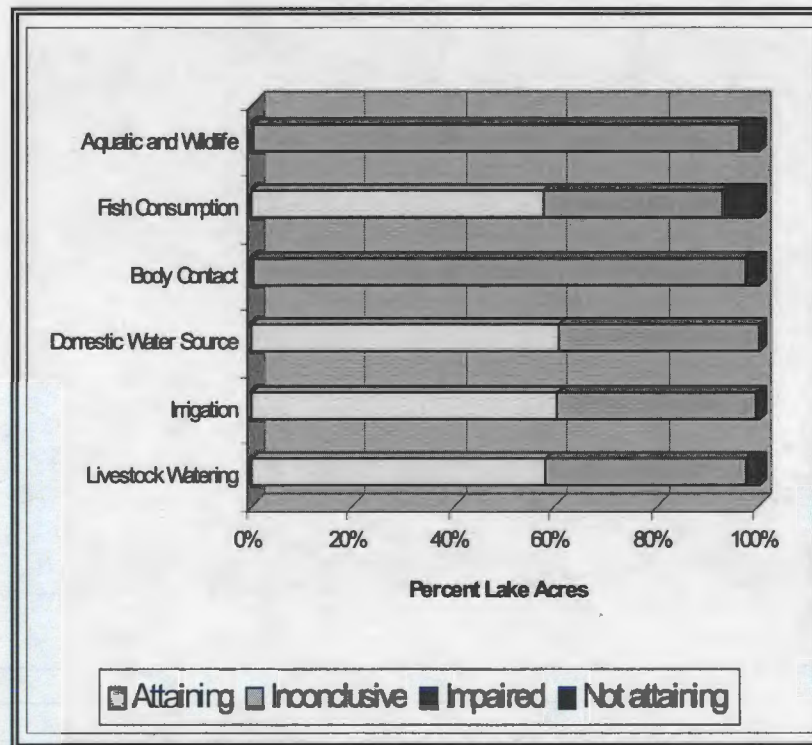


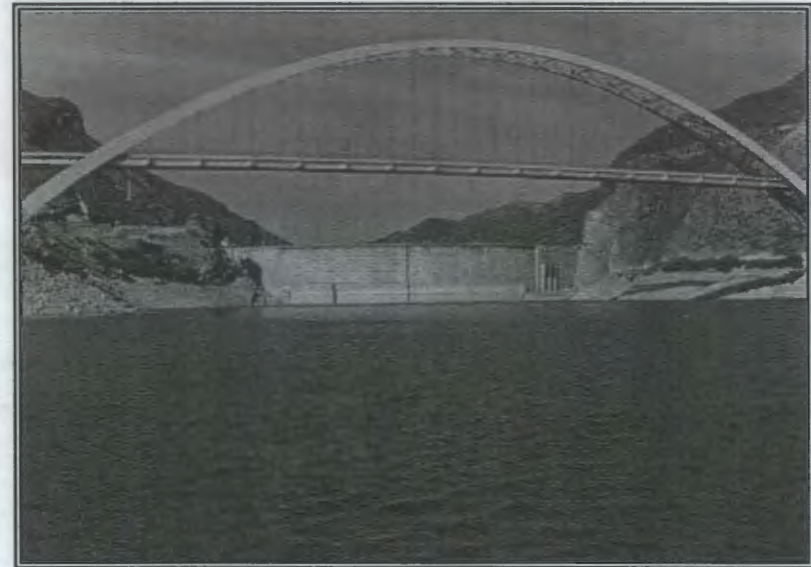
Figure 30. Support by designated use -- lakes

Table 34. Use Support Summary – Lakes Assessed in 2004

Designated Uses	Attaining (acres)	Inconclusive (acres)	Impaired (acres)	Not Attaining (acres)	Total Assessed (acres)
Overall Use Support	220	69,458	6,362	615	76,655
Aquatic and Wildlife	245	73,451	2,602	356	76,655
Fish Consumption	44,331	26,836	5,319	169	76,655
Body Contact	220	74,500	1,579	355	76,655
Domestic Water Source	40,692	26,319	0	0	67,011
Irrigation	43,725	28,028	152	235	72,140
Livestock Watering	43,869	29,748	1,564	355	75,536



Peña Blanca Lake in southern Arizona is not attaining its uses. A TMDL for mercury in fish tissue was completed in 1999, and a fish consumption advisory is still in effect.



Roosevelt Lake, northeast of Phoenix, was impacted by the Rodeo-Chediski fire of 2002. Numerous violations of water quality standards occurred immediately following the fire. The status of this lake is inconclusive until more data are gathered to determine whether residual effects from the fire still remain.

What pollutants impair lakes and streams?

Pollutants identified in this assessment are summarized in **Tables 35 and 36** and compared in **Figures 31 and 32** below. Information about pollutants impairing a specific lake or stream is provided in Chapter IV. General information about these pollutants and their sources follows below.

Table 35. Pollutants Impairing Arizona's Streams – 2004

	Impaired or Not Attaining (miles)
Metals/Metalloids	
Arsenic	3
Boron	33.6
Cadmium	56
Copper	214.7
Lead	21
Mercury	34.6
Selenium	203.9
Silver	17.4
Zinc	78.9
any metal	663.1
Sediment-related	216.1
Pathogens	
<i>Escherichia coli</i>	99.1
Pesticides	
Chlordane	98.9
DDT	98.9
Toxaphene	98.9
Low pH	44
Nutrients	
Nitrogen/Nitrate	32.1
Ammonia	6.2
Low Dissolved Oxygen	31.6
Chlorine	6.2

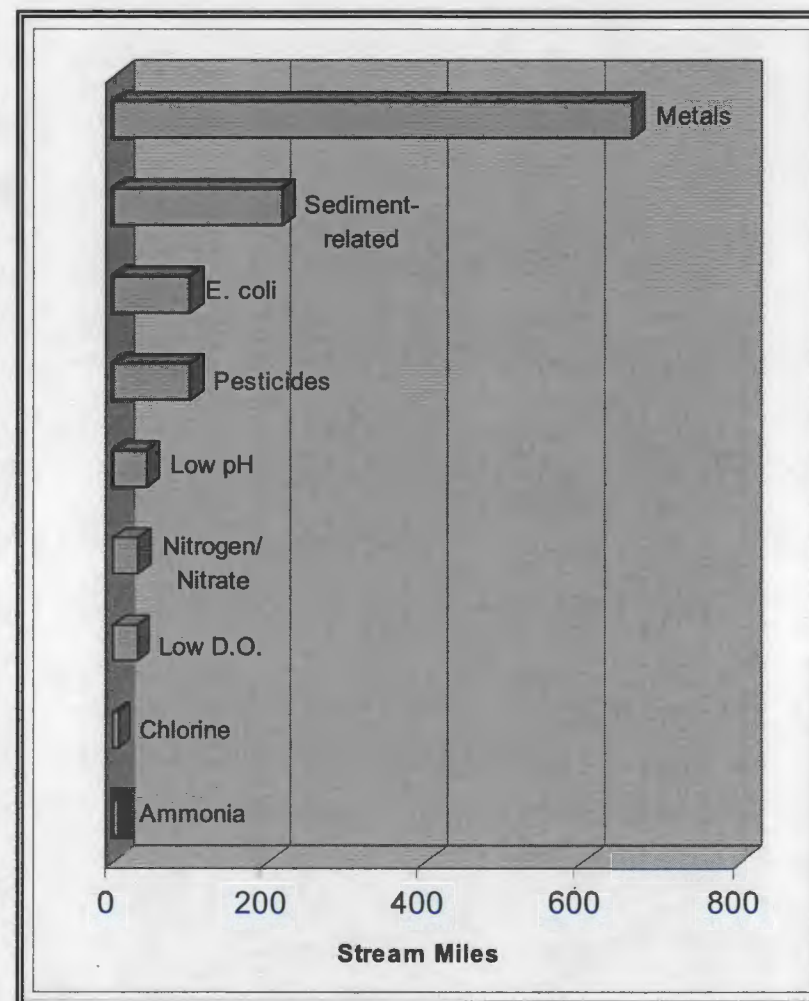


Figure 31. Pollutants impairing streams

Table 36. Pollutants Impairing Arizona's Lakes

	Impaired or Not Attaining (acres)
Metals	
Mercury	5,333
Nutrient-related (impaired by any of the following: pH, dissolved oxygen, nitrogen, ammonia, chlorophyll)	2,958
Pesticides	
Chlordane	285
DDT	285
Toxaphene	285
Pathogens	
<i>Escherichia coli</i>	13

Metals – Metals can leach more readily from soil or mineralized rock that has been exposed by mining, road building or land development activities. Ore bodies can also naturally contribute metals to streams and ground water springs recharging streams. Arizona has extensive areas of mineralized rock, and therefore, a high potential for metals pollution. Generally, metals (e.g., beryllium, cadmium, copper, manganese, mercury, silver, and zinc) rapidly adhere to sediment, with the more toxic dissolved metals being present in surface water only for relatively short distances near mining sites or other potential sources. When metal-contaminated sediment is transported downstream to a lake, the water slows and the sediments drop to the bottom of the lake. Metals do not readily go back into a dissolved state in these relatively alkaline lakes, and the contamination is buried under layers of sedimentation. Therefore we do not often see metals pollution in lakes, with the exception of mercury.

Once elemental mercury is methylated by microbes in the bottom of the lake, methylmercury can then bioaccumulate in aquatic life. The concentration of mercury then biomagnifies (compounds) as contaminated tissue is consumed in the food chain. This also means that mercury can occur well below the detection limit in surface water samples and even in the sediment, while fish tissue can be contaminated through bioaccumulation to a level that is hazardous for human consumption or for wildlife that prey on these fish.

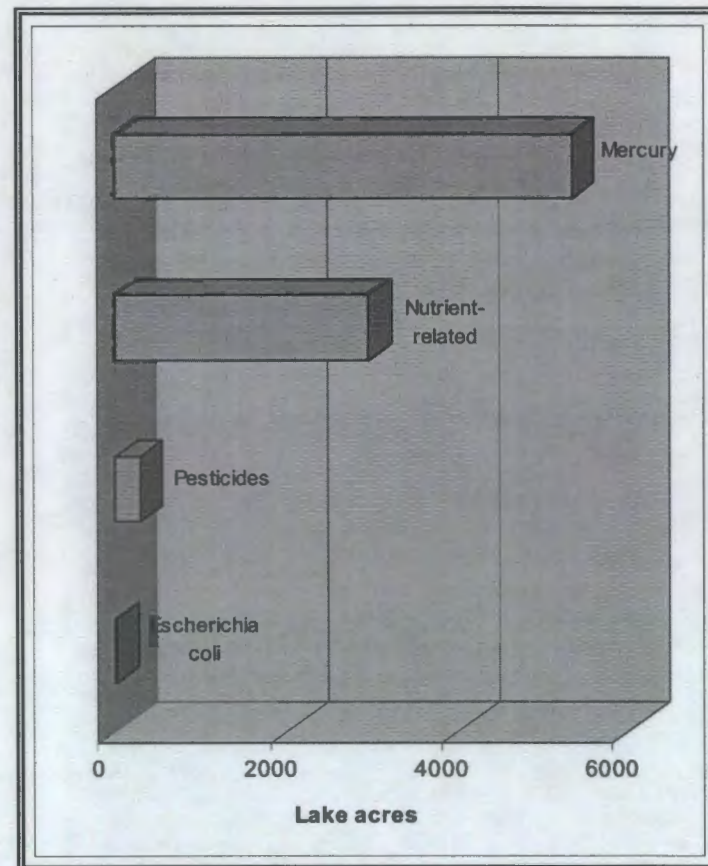


Figure 32. Pollutants impairing lakes

Low Dissolved Oxygen, High pH and High Nutrient Levels – Varying combinations of these factors occur in many of Arizona's shallow, constructed lakes, and in streams as well, although less often. Low dissolved oxygen and high pH stress aquatic organisms and can contribute to fish kills. A high density of submerged and emergent aquatic vegetation can restrict recreational activities. In addition, algal blooms which can result from increased nutrients use a substantial amount of oxygen in the water at night when photosynthesis cannot take place.



ADEQ staff members practice "clean-sampling" techniques on Alamo Lake in the Bill Williams watershed. Clean sampling techniques should allow ADEQ to achieve lower laboratory detection limits for mercury. Alamo Lake is on the 2004 303(d) List due to mercury in fish tissue, ammonia and pH. A fish consumption advisory was issued in February 2004.

Pathogens – ADEQ measures pathogen levels by testing for *Escherichia coli*. While some amount of pathogens occurs naturally in the environment, they can sometimes reach dangerously high levels and pose a threat to human health. Some swimming areas regularly close to the public when this happens.

Pesticides – Most of the pesticides found in Arizona's surface waters are now banned from use in the United States. However, these substances take a long time to degrade and are still a problem today. They often are present in bottom sediment, where they can bioaccumulate up the food chain to fish and fish predators, including humans.

Turbidity and Suspended Sediment Concentration (SSC) – Arizona repealed its turbidity standard in 2002 and adopted a suspended sediment concentration standard to protect Aquatic and Wildlife designated uses. Turbidity is a qualitative measure of water clarity or opacity, while suspended sediment concentration is a quantitative measure of suspended solids. These two

parameters represent two different ways to measure fine suspended particles such as clay, silt, organic and inorganic matter, plankton, and other microscopic organisms.

Arizona's turbidity standard was derived from criteria established in more humid states that do not share its unique arid conditions, relatively low plant coverage, and erodible soils. These factors make some degree of suspended solids a natural phenomenon in Arizona; however, there are numerous other human-induced causes that have raised suspended sediment loads to an unhealthy level in some of Arizona's lakes and streams. Excessive suspended solids may be associated with aquatic habitat degradation such as reduced light penetration, temperature changes, excessive bottom deposits, and algal blooms.

Arizona's new numeric suspended sediment concentration criterion is intended to protect fish in streams, with the exception of effluent-dominated streams. It is also not applicable to lakes. Arizona's SSC standard is set at 80 mg/L, expressed as the geometric mean of at least four samples. The new standard is only applicable to samples collected at or near base flow and does not apply to a surface water during or soon after a precipitation event.

Since the SSC standard was just recently adopted in 2002, a minimal amount of data were available for this assessment. Thus, ADEQ has continued to assess the turbidity standard repealed in 2002 in an effort to record potential suspended sediment problems. Additionally, these exceedances provide evidence of a potential narrative bottom deposits standard violation.

Table 37 on the next page provides a checklist of those waters with significant turbidity and/or SSC exceedances. These lakes and streams will be prioritized for further suspended sediment and bottom deposit studies.

Table 37. Surface waters with significant turbidity and/or SSC exceedances

Parameter		Suspended Sediment Concentration		Turbidity		
Waterbody	Waterbody ID	Impaired due to SSC*	Inconclusive due to SSC	On the 2002 303(d) List for turbidity	Significant number of turbidity exceedances (would have been listed by ADEQ or EPA under repealed standard)	Turbidity TMDL complete (not attaining)
Bill Williams Watershed - (none)						
Colorado - Grand Canyon Watershed						
Colorado River, Parashant Canyon - Diamond Creek	AZ15010002-003	X		X	X	
Dogtown Reservoir	AZL15010004-0480				X	
Paria River, Utah border - Colorado River	AZ14070007-123	X			X	
Virgin River, Beaver Dam Wash - Big Bend Wash	AZ15010010-003	X		X	X	
Colorado - Lower Gila Watershed						
Colorado River, Indian Wash - Imperial Dam	AZ15030104-001		X			
Colorado River, Main Canal - Mexico border	AZ15030107-001		X			
Little Colorado Watershed						
Ashurst Lake	AZL15020015-0090				X	
Billy Creek, headwaters - Show Low Creek	AZ15020005-019				X	
Chevelon Creek, Black Canyon - Little Colorado River	AZ15020010-001				X	
Kinnikinick Lake	AZL15020015-0730				X	
Little Colorado River, West Fork - Water Canyon Creek	AZ15020001-011				X	X
Little Colorado River, Water Canyon Creek - Nutrioso Creek	AZ15020001-010				X	X
Little Colorado River, Nutrioso Creek - Camero Wash	AZ15020001-009				X	X
Little Colorado River, unnamed trib (15020001-021) - Lyman Lake	AZ15020001-005				X	X
Little Colorado River, Silver Creek - Carr Wash	AZ15020002-004				X	
Little Colorado River, Zion Reservoir - Concho Creek	AZ15020002-016		X			
Little Colorado River, Porter Tank - McDonalds Wash	AZ15020008-017	X				
Nutrioso Creek, headwaters - Picnic Creek	AZ15020001-017					X
Nutrioso Creek, Picnic Creek - Little Colorado River	AZ15020001-015					X
Show Low Creek, headwaters - Linden Wash	AZ15020005-012				X	

Parameter		Suspended Sediment Concentration		Turbidity		
Waterbody	Waterbody ID	Impaired due to SSC*	Inconclusive due to SSC	On the 2002 303(d) List for turbidity	Significant number of turbidity exceedances (would have been listed by ADEQ or EPA under repealed standard)	Turbidity TMDL complete (not attaining)
Middle Gila Watershed						
Gila River, Centennial Wash - Gillespie Dam	AZ15070101-008			X	X	
Salt River Watershed						
Christopher Creek, headwaters - Tonto Creek	AZ15060105-353			X	X	
Roosevelt Lake	AZL15060103-1240				X	
Salt River, Pinal Creek - Roosevelt Lake	AZ15060103-004		X			
Tonto Creek, headwaters - unnamed trib at 3418°10'7111 04'14"	AZ15060105-013A			X	X	
Tonto Creek, unnamed trib at 3418°10'7111 04'14" - Haigler Creek	AZ15060105-013B			X	X	
San Pedro Watershed - (none)						
Santa Cruz Watershed						
Lakeside Lake	AZL15050302-0760				X	
Nogales and East Nogales Washes	AZ15050301-011			X	X	
Santa Cruz River, Josephine River - Tubac bridge	AZ15050301-008A			X	X	
Upper Gila Watershed						
Gila River, San Francisco River - Eagle Creek	AZ15040005-024				X	
Gila River, Eagle Creek - Bonita Creek	AZ15040005-023				X	
Gila River, Bonita Creek - Yuma Wash	AZ15040005-022		X	X	X	
San Francisco River, headwaters - New Mexico border	AZ15040004-023				X	
San Francisco River, Limestone Gulch - Gila River	AZ15040004-001			X	X	
Verde Watershed						
Beaver Creek, Dry Beaver Creek - Verde River	AZ15060202-002			X	X	
Verde River, Oak Creek - Beaver Creek	AZ15060202-015					X
Verde River, Beaver Creek - HUC boundary 15060203	AZ15060202-001					X
Verde River, West Clear Creek - Fossil Creek	AZ15060203-025				X	X
Verde River, Tangle Creek - Ister Flat	AZ15060203-018				X	

Parameter		Suspended Sediment Concentration		Turbidity		
Waterbody	Waterbody ID	Impaired due to SSC*	Inconclusive due to SSC	On the 2002 303(d) List for turbidity	Significant number of turbidity exceedances (would have been listed by ADEQ or EPA under repealed standard)	Turbidity TMDL complete (not attaining)
Whitehorse Lake	AZL15060202-1630				X	

* Note that SSC data were not available for most waters



The high suspended sediment levels are evident in the murky brown water of the Little Colorado River near Woodruff, Arizona. This reach of the Little Colorado, from Silver Creek to Carr Wash, is on the Planning List due to exceedances of the former turbidity standard.



An ADEQ staff member conducts sampling at a gage station specially constructed for a sediment study. The gage is located on the West Fork of the Black River in eastern Arizona. Data from this study were not yet available for this assessment.

What are the major sources of these pollutants?

The probable sources of pollutants impairing water quality in Arizona are reported in Tables 38 and 39 and compared in Figures 33 and 34 below. It is important to note that more than one source may be impacting a given stream reach or lake. Also important to note is that for most streams and lakes, only a potential, unconfirmed source can be identified based on best available information, knowledge of land uses and activities, and geology of the watershed. Documented source identification is limited to locations where special investigations, such as a TMDL analysis, have been conducted.

Table 38. Probable Sources of Stream Pollutants

	Impaired or Not Attaining (miles)
Agriculture	
Grazing	205.8
Historic pesticides	98.9
Crop production	33.6
Mining	228.2
Hydrologic modification	181.6
Outside Arizona	124.1
Recreation	77.7
Roads	38.6
Atmospheric deposition	34.6
Septic systems	31.5
Point source	22.6
Waste disposal	15.5

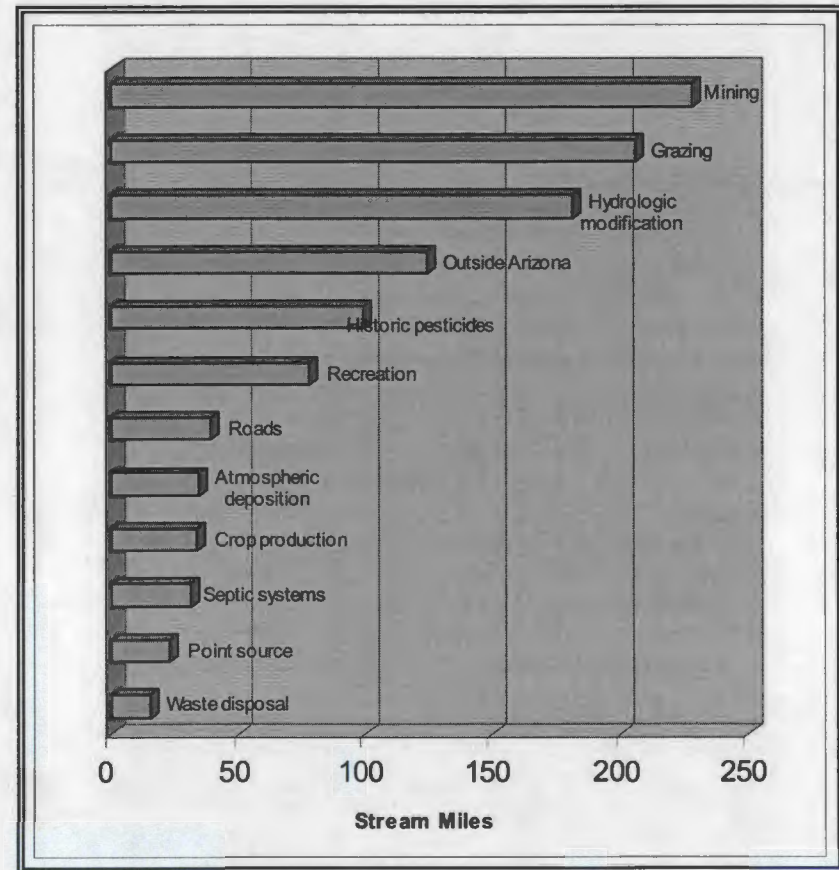


Figure 33. Probable sources of pollutants in streams

Table 39. Probable Sources of Lake Pollutants

	Impaired or Not Attaining (acres)
Atmospheric deposition	3,919
Nutrient cycling	2,773
Mining	1,464
Agriculture	
Historic pesticides	285
Grazing	230
Septic systems	355
Recreation	230
Design/Maintenance	215
Urban Area	112
Point Source	15

Natural Contributions -- Pollution is defined in the Clean Water Act, section 502 as a manmade or human-induced alteration of the chemical, physical, biological, and radiological integrity of water. Therefore, high levels of a pollutant which occur solely due to natural conditions are not a violation of Arizona's surface water quality standards because of a "natural background" exemption in the standards.

Natural sources do, however, make some relative contribution to almost all impaired waters. For example, copper is a naturally occurring substance in Arizona, but mining can disturb the earth and release unnaturally high amounts of copper into streams. Arizona's soils are highly erodible and have the potential to contribute suspended sediment easily, but grazing can add even more sediment to a stream. In addition, sunny and arid conditions can lead to excessive algal productivity and eutrophic lake conditions such as low dissolved oxygen and high pH, but poor lake design or maintenance can make these conditions much worse.

Because natural sources contribute to almost all impairments, it is not shown as a source category in Figure 33 or 34. These graphs illustrate suspected sources which add further pollution in addition to concentrations already occurring in the environment. Determining the relative contribution of natural sources among other potential sources may require sophisticated analysis requiring large amounts of data. This level of detailed analysis is conducted for a TMDL, use

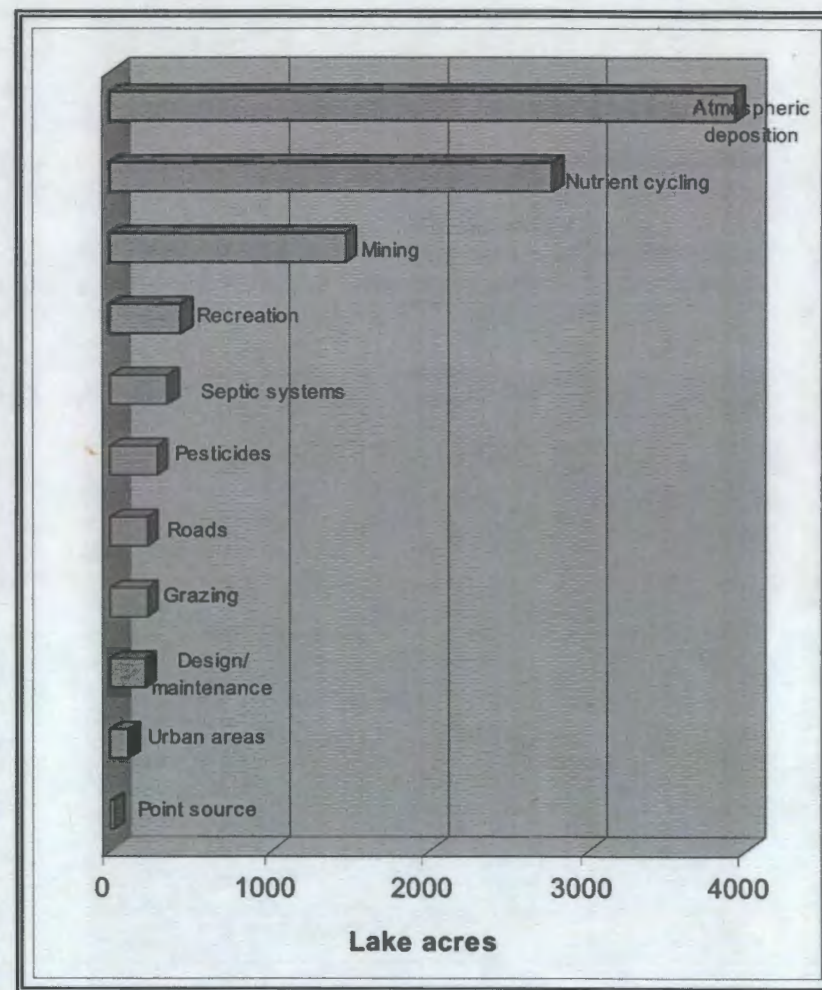


Figure 34. Probable sources of lake pollutants

attainability analysis, or to develop a site-specific standard.

Mining – Resource extraction activities and the natural occurrence of ores are frequently the source of metals and low pH in Arizona’s streams. Mining occurs in Arizona because metal ores are present.

Nutrient Cycling – Although normal for a lake system, nutrient cycling may cause nutrient over-enrichment and hypereutrophic conditions, which can in turn result in low dissolved oxygen levels and fish kills. Nutrient cycling can be exacerbated by excessive nutrient loading from sources such as agriculture or septic systems.

Shallow Lake Design and Maintenance – The construction and maintenance of a relatively shallow lake can result in negative impacts to the water chemistry or biological community. The physical characteristics of the lake (depth, volume, flushing rate) need to be in balance with natural rates of sediment transport and trophic conditions. When a lake or reservoir routinely exceeds narrative or numeric standards, redesigning the lake or changing maintenance procedures may be necessary to alleviate the water quality problems.

Agriculture -- Agricultural sources can be broadly grouped into four areas of concern: crop production, grazing, concentrated animal feeding operations, and historic use of banned pesticides.

- Irrigated crop production is a probable source of pollutants such as turbidity, boron, selenium, nutrients, and pesticides. Crop production is concentrated around areas with adequate surface or ground water in Arizona, such as along the Colorado River, the Salt River, the Gila River, and the Verde River.
- Livestock and wildlife grazing are widely distributed throughout the state, occurring on lands owned or managed by federal agencies, Arizona State Land Department, privately owned lands and Indian reservations. Grazing activities may contribute pollutants such as bacteria, nutrients, and suspended sediments (measured as turbidity and SSC).
- Concentrated animal feeding operations (CAFOs) are scattered across the state. These livestock holding areas are a concern due to potential discharges of nutrients, bacteria, and suspended sediment to surface and ground waters.
- Historic use of banned pesticides still causes water quality problems today. Banned pesticides such as DDT take a long time to degrade and bioaccumulate in fish tissue, where they can be passed on to offspring and predators, including humans. It is also possible that these substances are still being used illegally.

Recreation – The high concentration of people in many of the state’s popular

recreational areas can be a source of water quality impairment. Large numbers of motorized boats can spill a significant quantity of oil and gasoline into lakes. Off-road vehicles can erode sediment into streams. Human and pet waste not properly disposed of can contribute pathogens to the water. Even the feeding of wildlife, such as ducks on our urban lakes, can concentrate these animals in unnaturally high numbers around waterways. As a result, animal waste can reach very high levels in the water.

Urban Runoff – The hard surfaces that cover our state’s urban areas can contribute pollutants to Arizona’s waters. Roads, sidewalks, and parking lots are impervious surfaces where water cannot permeate the ground. Urban runoff is especially severe during storm events, which can quickly transport pollutants such as sediment from roads or fertilizer from yards into streams and lakes.

Hydrologic Modification – Stream channelization and dam construction are two examples of hydrologic modification in Arizona. These physical alterations can result in water quality problems such as increased sedimentation or excessive nutrient loading due to the removal of “buffer zones” around streams and lakes that would normally filter out pollutants.

A few words about point and nonpoint sources

Water pollution is often discussed in terms of “point” and “nonpoint” sources. Thirty years ago, federal and state regulations primarily governed point source discharges through NPDES permit requirements. Point sources come from a discrete discharge point or discharge pipe (e.g., wastewater treatment plant discharge). However, water pollution also comes from more diffuse sources that are referred to as nonpoint sources, such as runoff from fields, urban areas, or mining operations.

As indicated in **Table 40**, most pollution in Arizona’s surface waters is contributed by nonpoint or diffuse sources of pollution. This may indicate the effectiveness of the state and federal regulatory programs working with point source discharges and that control of nonpoint source contributions largely remains non-regulatory, based on education and funding mitigation projects.

Table 40. Point and Nonpoint Source Contribution to Impairment

	Streams, canals, and washes (miles)	Lakes and reservoirs (acres)
Point Sources	6	15
Nonpoint Sources	735	6,962

For example, in addressing nonpoint source contributions to an impaired surface water, the TMDL Program works with all interested parties to identify implementation strategies to mitigate the problem. Then ADEQ's Nonpoint Source and Watershed Management Programs work with the local watershed work groups and federal agencies to identify funding sources to implement control strategies. Federal agencies, such as the Forest Service and Bureau of Land Management, address nonpoint source pollution in their management strategies by requiring the implementation of Best Management Practices.

Is the water safe to drink, swim in, and fish from?

Can We Drink the Water? – The quality of water delivered by public water systems is strictly regulated and monitored to ensure that federal and state standards established to protect public health are met. Drinking water advisories are issued by the supplier when monitoring confirms that a drinking water standard has been exceeded. If water is supplied by a public water system, information about the quality can be obtained by contacting the supplier and requesting a consumer confidence report, or by contacting ADEQ's Drinking Water Program at 1-800-234-5677, Extension 771-4624.

When water is supplied by a private water system (i.e., a system serving less than 15 connections and 25 people), it is the user's responsibility to test and protect the quality of their drinking water. General water quality information and ways to protect drinking water sources can be obtained by contacting a county health department. Ground water quality information about wells monitored in an area can also be obtained from EPA's STORET database through the internet at: <http://www.epa.gov/STORET>

Is It Safe to Swim in the Water? – Frequently visited swimming areas are monitored for *Escherichia coli*, such as at Slide Rock State Park, Lake Havasu, Lake Powell, and the Salt River Recreation Area. Beaches have been closed when verification sampling results exceed water quality standards and remain closed until standards are met. ADEQ is unaware of routine monitoring at other swimming and water-skiing areas. Studies suggest that swimming should be avoided in storm water runoff and in stagnant water. Waters classified as "effluent dependent waters" and many urban lakes are also not designated for swimming or wading uses.

Mohave County monitors beaches regularly in Lake Havasu during the summer. Extensive studies and mitigation actions were conducted in Thompson Bay in the 1990's to correct historic pathogen problems.

The Bureau of Reclamation in cooperation with the National Park Service monitors beaches once a week during the summer in Lake Powell. Lake Powell

beach closures have occurred only in Utah.

The US Forest Service monitored the Salt River Recreation Area during the summers of 2002 and 2003 under ADEQ's Water Quality Improvement Grant Program. Monitoring data showed nominal bacterial levels, with no confirmed exceedance which would cause a swimming closure. ADEQ awarded a Water Quality Improvement Grant to improve sanitary conditions in this heavily used recreation area.

Of the monitored swimming areas, only Slide Rock State Park closed for swimming during the assessment period. A bacteria Total Maximum Daily Load (TMDL) analysis has been completed on Oak Creek at Slide Rock State Park, which estimated contributing loads from sources within this sub-watershed and developed alternatives to mitigate impacts to water quality. The following Slide Rock swimming closures occurred during the assessment period:

1998 - 7 closures, occurring June through September
1999 - 10 closures, occurring July through September
2000 - 20 closures, occurring May through September
2001 - 16 closures, occurring June through September
2002 - 3 closures, occurring July through August

Should We Eat the Fish? – Some chemical pollutants concentrate in fish and shellfish by accumulating in fatty tissues or selectively binding to muscle tissue. Some of these pollutants cannot be detected in the water column nor in bottom sediments, but bioaccumulate in aquatic life. This bioaccumulation may pose a threat to human health if these organisms are eaten on a regular basis in excess of federal fish consumption advisory guidelines.

Fish consumption advisories are issued to inform the public about possible adverse health effects and contain recommendations for how many fish meals can safely be consumed. Advisories may be directed at a particular subset of the population because some people are at greater risk (e.g., sport or subsistence fishers, pregnant women and children).

In Arizona, fish consumption advisories are currently in effect in 12 areas (**Table 41 on the next page**). Additional information about fish tissue screening and fish advisories can be obtained by contacting ADEQ at (602) 771-4536 or Arizona Game and Fish Department at (602) 789-3260.

Table 41. Fish Consumption Advisories – 1998-present

Waterbody Name Size	Pollutant and Sources	Advisory and Date
Painted Rocks Reservoir, Painted Rock Borrow Pit Lake, and portions of the Gila, Salt, and Hassayampa rivers – 380 acres and 140 miles	DDT metabolites, toxaphene, dieldrin, and chlordane pesticide pollutants due to historic use of these banned pesticides.	Since 1991 – Do not consume fish and other aquatic organisms.
Dysart Drain (canal drains to Agua Fria River in the Phoenix metro area) – 3 miles	DDT metabolites contamination caused by historic use of this pesticide.	Since 1995 – Do not consume fish and other aquatic organisms.
Arivaca Lake – 120 acres	Mercury contamination. Potential sources include mine tailings, atmospheric deposition, and naturally mineralized soils.*	Since 1996 – Do not consume fish and other aquatic organisms.
Pena Blanca Lake – 50 acres	Mercury contamination caused by historic mining and natural conditions at the lake.*	Since 1995 – Do not consume fish and other aquatic organisms.
Upper and Lower Lake Mary – 1625 acres combined	Mercury contamination. Sources to be investigated.	Since May 2002 – Do not consume walleye fish and limit consumption of other fish to one 8-ounce fillet per month.
Parker Canyon Lake – 129 acres	Mercury contamination. Sources to be investigated.	Since October 2002 – Women of childbearing age and children under age of 16: No consumption Women not in above categories: Consult health care provider Adult men (16 yrs. or older): Three 8 ounce (uncooked weight) fish meals per month
Lyman Lake – 1500 acres	Mercury contamination. Sources to be investigated	Since October 2002 – Children under the age of 6: No consumption Women of childbearing age and children under the age of 16: One 8 ounce (uncooked weight) fish meal per month Women not in above categories: Consult health care provider Adult men (16 yrs. or older): Five 8 ounce (uncooked weight) fish meals per month

Soldier Lake – 28 acres	Mercury contamination. Sources to be investigated.	Since July 2003 – Do not consume fish.
Soldier Annex Lake – 122 acres	Mercury contamination. Sources to be investigated.	Since July 2003 – Do not consume fish.
Long Lake – 594 acres	Mercury contamination. Sources to be investigated.	Since July 2003 – Do not consume fish.
Alamo Lake - 1,414 acres	Mercury contamination. Sources to be investigated.	Since February 2004 - Children under the age of 6: No consumption of largemouth bass or black crappie Women of childbearing age: One 8 ounce (uncooked weight) fish meal per month of largemouth bass or black crappie Women not of childbearing age: Five 8 ounce (uncooked weight) fish meals per month of largemouth bass or black crappie Adult men (16 yrs. or older): Six 8 ounce (uncooked weight) fish meals per month of largemouth bass or black crappie
Coors Lake - 229 acres	Mercury contamination. Sources to be investigated.	Since February 2004 -- Children under the age of 6: No consumption of largemouth bass Women of childbearing age: One 8 ounce (uncooked weight) fish meal per month of largemouth bass Women not of childbearing age: Five 8 ounce (uncooked weight) fish meals per month of largemouth bass Adult men (16 yrs. or older): Six 8 ounce (uncooked weight) fish meals per month of largemouth bass

* Source identification and remediation actions have been developed through the Total Maximum Daily Load (TMDL) analysis process.

ADEQ is investigating opportunities to combine resources from multiple programs to determine the source, transport, and fate of historically used pesticides along the Gila River and its tributaries between Phoenix and Painted Rocks Lake. This study could be used to update the health risk assessment issued in 1991 by the Arizona Department of Health Services and to complete a TMDL analysis for these pesticides.

National Mercury Fish Consumption Advisory – In January 2001, EPA issued a national advisory concerning risks associated with mercury in freshwater fish for women who are pregnant or may become pregnant, nursing mothers, and young children. EPA is recommending that these most vulnerable groups limit fish consumption to one meal per week. That would be six ounces of cooked fish (eight ounces of uncooked fish) for an adult, and two ounces of cooked fish (three ounces uncooked) for a young child. US Food and Drug Administration has a companion advisory concerning the hazard posed by some fish purchased commercially (<http://www.cfsan.fda.gov>).

Nationally, mercury is thought to be introduced into water at higher than natural background levels due to air deposition. However, the main sources of mercury in Arizona are thought to be natural deposits, along with anthropogenic use of mercury. When mercury enters the water, biological processes transform it into the highly toxic form of methylmercury. Methylmercury accumulates in fish, with larger predatory fish generally accumulating higher levels of methylmercury. Methylmercury is a potent toxin, and babies of women who consume large amounts of fish when pregnant are at greater risk for changes in their nervous system that can affect their ability to learn.

Further Investigations – In cooperation with the Arizona Game and Fish Department, ADEQ has been investigating human health risks associated with eating fish caught in Arizona's lakes. Fish tissue samples have been collected and analyzed for mercury from the following lakes, which were chosen due to present or historic mining, the presence of predatory fish (e.g., largemouth bass, channel catfish, or northern pike), and recreational fishing activity:

- Bill Williams Watershed – Alamo Lake
- Colorado/Grand Canyon Watershed – Dogtown Reservoir
- Little Colorado-San Juan Watershed – Ashurst Lake, Fool's Hollow Lake, Lake Mary, Lyman Lake, Mormon Lake
- Middle Gila Watershed – Horsethief Basin Lake, Lynx Lake, Picacho Reservoir
- Santa Cruz-Rio Magdalena-Rio Sonoyta Watershed – Parker Canyon Lake
- Upper Gila Watershed – Dankworth Ponds, Roper Lake
- Verde Watershed – Goldwater Lake, Granite Basin Lake, Pecks Lake,

Stoneman Lake, Watson Lake, Willow Creek Reservoir

Results from this monitoring led to the fish consumption advisory issued in May 2002 for Upper and Lower Lake Mary, Parker Canyon Lake and Lyman Lake. Recent monitoring in support of the Lake Mary TMDL has discovered mercury in Soldier Annex, Soldier Lake and Long Lake and also led to advisories for all three of these lakes.

Why do Fish Kills or Abnormalities Occur? – Fish kills investigated by the Arizona Game and Fish Department and found to be due to a water quality concern are reported in Table 42 on the next page. Most of these fish kills were associated with highly productive (eutrophic or hypereutrophic) lakes. Although lake eutrophication is a natural process, it can be accelerated by human activities in the watershed or lake design. Fish kills caused by a reduction in water quantity (i.e., drought, dam releases) or because non-native game fish have been stocked in habitats that cannot support them, are not reported in Table 43.



Lake Sierra Blanca experienced a fish kill in 1998 due to weed growth and high pH. It has been placed on the Planning List for further monitoring.

Table 42. Reported Fish Kills and Abnormalities – 1998-2002

Surface Water and Size	Pollutant and Sources	Dates
Little Colorado River-San Juan Watershed		
Black Canyon Lake 37 acres AZL15020010-0180	Ash, debris and sediment from the <u>Rodeo-Chediski Fire</u> washing into the lake following monsoon rains resulted in a complete fish kill.	July 2002
Cholla Lake 130 acres AZL15020008-0320	Organic <u>bottom sediments</u> , resuspended in the water column by the wind, caused low dissolved oxygen and a massive fish kill	July 2002
Middle Gila Watershed		
Canyon Creek 6 miles AZ15060103-014	Ash washing down the creek following the <u>Rodeo-Chediski Fire</u> killed all fish as well as all other aquatic life. Note that the damage was observed to extend farther downstream into tribal land.	July 2002
Cortez Park Lake 2 acres AZL15060106B-0410	<u>Herbicide applications</u> resulted in a massive die-off of aquatic vegetation. Associated low dissolved oxygen then killed approximately 2600 fish.	June 1999
Grand Canal 5 miles AZ15070102 - 250	Fish kill consisting entirely of carp occurred between 99 th and 107 th Avenues. Probable cause was dumping of <u>unknown substance</u> into canal.	2001
Salt River, below 91 st Ave. WWTP 5 miles AZ15060106B-001D	<u>Inadequate treatment</u> (lack of aeration and denitrophication) due to a power outage, resulted in an extensive fish kill in the Gila River and part of Buckeye Canal.	October 2000
Salt Watershed		
Crescent Lake 100 acres AZL15060101-0420	AGFD reports that due to <u>productivity (algal blooms)</u> , winter and summer fish kills have occurred on a very regular basis. The most recent was in 1998.	Winter 1998
Lake Sierra Blanca 30 acres AZL15060101-1390	Aquatic weed growth and subsequent <u>high pH</u> resulted in the death of approximately 100 rainbow trout.	June 1998

Santa Cruz-Rio Magdalena-Rio Sonoyta		
Arivaca Lake 120 acres AZL15050304-008	<u>Algal bloom</u> die off and resulting low dissolved oxygen killed 4000-5000 fish over a 4-day period in 1999. A smaller fish kill in 2000 was related to a storm inflow of water that suspended organic sediment loading in the lake and caused low dissolved oxygen.	June 1999 July 2000
Upper Gila Watershed		
Luna Lake 120 acres AZL15040004-0840	<u>Algal bloom</u> die-off, high pH, and low dissolved oxygen resulted in several hundred fish dying over a 16-day period.	July 1999
Verde Watershed		
Watson Lake 150 acres AZL15060202-1590	A blue-green <u>algae bloom</u> and high pH (9.5 - 9.8) associated with a fish kill. The algae is normally associated with lakes with high pH and elevated nutrients. It can produce a toxin that can kill fish.	July 2000
Whitehorse Lake 40 acres AZL15060202-1630	Low dissolved oxygen due to <u>algal bloom</u> die off, killed approximately 4000 fish. The majority of the dead fish were non-native black crappie young of the year.	July 1999

VII. Ground Water Quality: Out of Sight Not Out of Mind

How Does ADEQ Characterize Ground Water?

Ambient Ground Water Monitoring Program – ADEQ's Ambient Ground Water Monitoring Program has multiple objectives for its monitoring program. These objectives include:

- ▶ Fulfill legislative mandates to monitor aquifers to detect the presence of new and existing pollutants, determine compliance with applicable water quality standards, determine the effectiveness of implemented Best Management Practices, evaluate the effects of pollutants on public health or the environment, and determine water quality trends;
- ▶ Characterize regional ground water quality;
- ▶ Determine impacts from specific anthropogenic (human caused) sources.

Ground water sampling is conducted by ground water basin to examine regional ground water quality. There are 51 ground water basins recognized by the Arizona Department of Water Resources. Since 1995, ADEQ has completed 10 ground water basin studies, has ongoing studies in 13 more basins, and intends to start three more basins this year (Figure 35). Data collected by this program are provided to the well owner and incorporated into ADEQ's Water Quality Database. A comprehensive report and a summary fact sheet are published for each basin studied. These can be obtained and downloaded from ADEQ's internet site at: www.azdeq.gov. These studies are also reflected in the ground water quality monitoring maps provided in this report. Note that the wells sampled are not evenly distributed across the state. Areas where basin studies have been completed will have a much greater volume of data, whereas other areas may have little or no data at this time.

Selection of basins for investigation are based on a number of factors, including watershed rotation schedule (see Chapter VIII) and development pressures in the basin that may be impacting ground water quality. Systematic, grid-based random sampling is conducted to investigate potential nonpoint source pollution impacts on ground water quality. Higher density sampling occurs around targeted land uses to determine their affect on ground water quality.

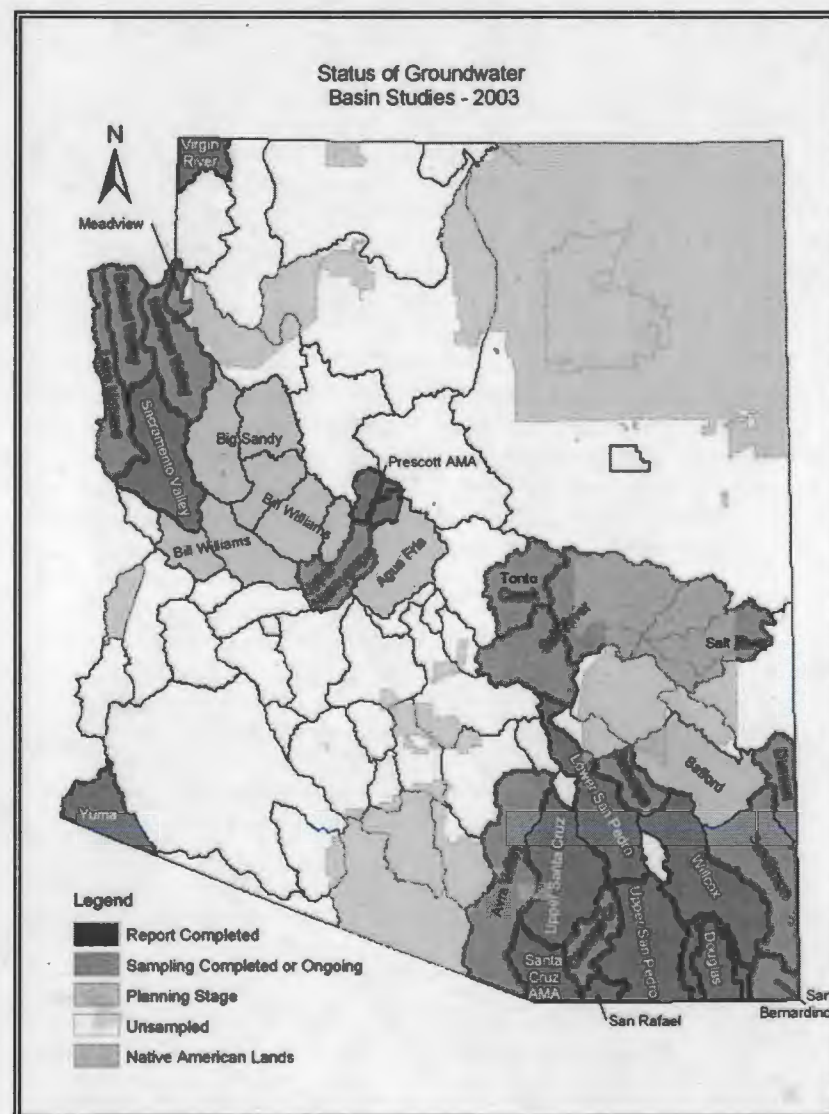


Figure 35. Ground Water Basin Studies

Basin studies are sometimes conducted in collaboration with other internal and external monitoring programs. The internal programs include the Pesticide Contamination Prevention Program, the Border Program (Mexico border), and the Aquifer Protection Permit Program. The U.S. Geological Survey has been ADEQ's external partner.

Inorganic constituents (see list in text box) are collected at each site, while samples for Volatile Organic Compounds (VOCs), pesticides on Arizona's Ground Water Protection List or banned pesticides, radionuclides, bacteria, perchlorate, and other constituents were collected in areas where these parameters are likely to be encountered. Samples for oxygen, hydrogen and nitrogen isotope analysis are collected at certain sites to assess aquifer recharge characteristics. Based on the ground water sampling results and statistical analysis, index wells are selected which will be re-sampled in the future to determine ground water quality change over time.

Inorganic Chemicals Tested			
Antimony	Beryllium	Cyanide	Nitrate
Asbestos	Cadmium	Fluoride	Nitrite
Arsenic	Chromium	Lead	Selenium
Barium	Copper	Mercury	Thallium

The Ambient Ground Water Monitoring Program provides important information to the public, including an overview of the ground water quality within a basin, areas where specific ground water quality problems can be expected to occur, and whether there has been any change over time in the ground water quality of the basin. This program is particularly important in evaluating effectiveness of nonpoint source pollution control by its broad, regional approach to monitoring and assessment of water quality.

Pesticide Contamination Prevention Program – This state-mandated program is intended to prevent contamination of ground water, soil, and the vadose zone from pesticides used in agriculture. The Ground Water Protection List, established in 1992, includes a list of 152 pesticide active ingredients that have the potential to pollute groundwater in Arizona. Another 37 pesticides are on the list of banned pesticides (e.g. DDT, chlordane, lindane). However, only 22 of the 189 pesticides listed or banned have an Aquifer Water Quality Standard (see text box).

Pesticides with Aquifer Water Quality Standards

Alachlor	Chlordane	2,4-D	Endothall	Glyphosate	Lindane	Picloram
Atrazine	Dalapon	Dinoseb	Endrin	Heptachlor	Methoxychlor	Simazine
Carbofuran	DBCP	Diquat	EDB	Heptachlor epoxide	Oxamyl	Silvex
						Toxaphene

The monitoring objectives for the Pesticides Contamination Prevention Program are:

- Determine whether these pesticide active ingredients or their metabolites are present or absent in the soil, vadose zone, or ground water;
- Determine whether an Aquifer Water Quality Standard has been exceeded; and
- Determine if ground or surface water pollution is occurring or has the potential to occur (soil contamination is usually an indicator) from general usage of pesticides.

Monitoring is aimed at providing an early detection to prevent further contamination; therefore, banned pesticides are not normally included in the analyses. Any detection of pesticides results in a follow up investigation, and if an exceedance is validated through follow-up monitoring, enforcement actions may be taken to mitigate the contamination. During the investigation, strict quality control samples (splits, duplicates and field spikes) are collected and tested.

Monitoring results are compared to water quality standards and Arizona Department of Health Services' Human Health Based Guidance Levels for the Ingestion of Contaminants in Drinking Water and Soil and other standards. All data collected by this program are included in the 305(b) Report and the Annual Groundwater Quality Report to the Legislature. In addition, quarterly monitoring results are sent to the Arizona Department of Agriculture.

Wells monitored for pesticides during the past 10 years are shown on Figure 36. This map illustrates the following information about pesticides in Arizona:

- Pesticides were detected at levels higher than an Aquifer Water Quality Standard (stars on the map) in only one area. Dibromochloropropane (DBCP) was confirmed in three wells associated with citrus crops in 1994 in the Avondale area.
- Of the 407 wells monitored, pesticides have been detected in 41 wells (10%) (triangles and stars on the map).
- In 9% of the wells (37 wells), pesticides were detected but no pesticide standards were exceeded at these wells (triangles on the map), usually because no standard has been established for the pesticide detected.

Monitoring efforts were refocused in 1998 to two areas (Maricopa and Yuma counties) based on the results of the previous ten years of data collection. These areas have had intense agricultural activities, so they are sampled every other year with funding provided by EPA through the Department of Agriculture.

While the focus of the Pesticide Contamination Prevention Program has shifted to known areas of impact, through the ambient groundwater program, pesticide monitoring is still conducted in basin studies where land uses exist to suggest possible impacts.

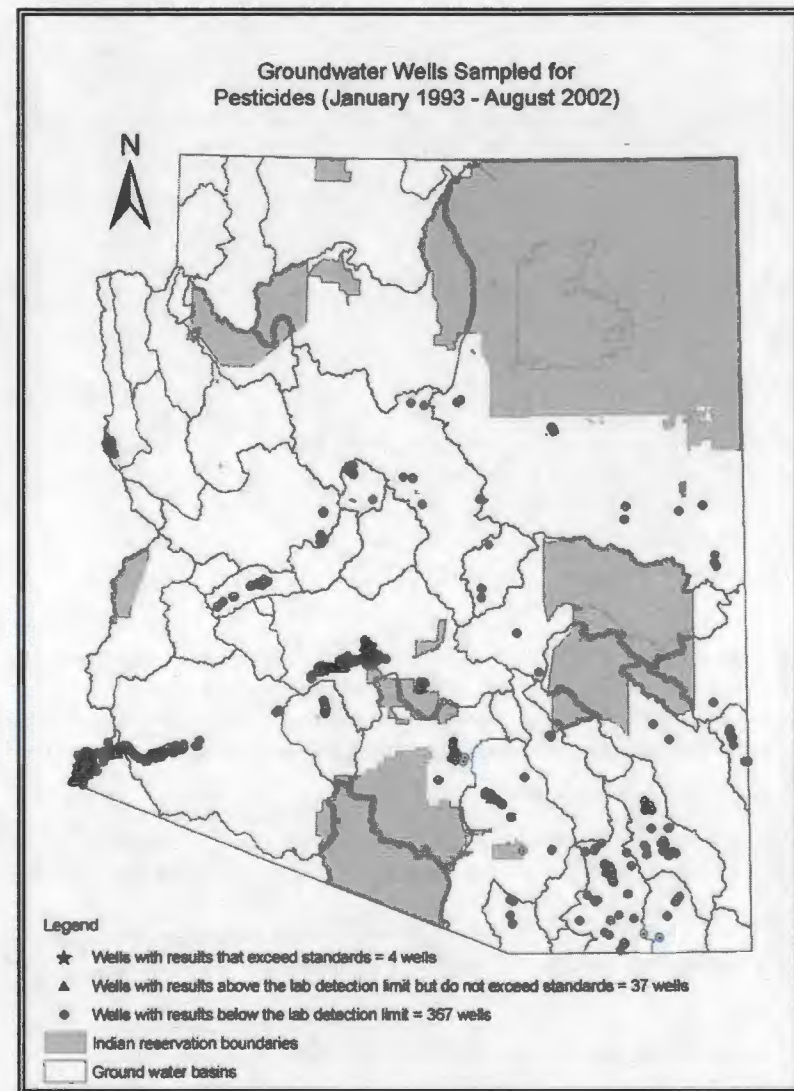


Figure 36. Pesticide Monitoring in Arizona

Ground water quality in Arizona

Most of Arizona's ground water meets Aquifer Water Quality Standards, and thus is suitable for drinking water use. However, there are some ground water quality concerns in Arizona. To provide a general evaluation of ground water quality, this report looks at six constituents in the ground water:

- Pesticides (already discussed in the previous section)
- Arsenic
- Fluoride
- Hardness
- Nitrate
- Radiochemicals (gross alpha and uranium)
- Total dissolved solids (TDS)

Only three of these constituents indicate anthropogenic sources of pollution to ground water when they are elevated (pesticides, TDS, and nitrate). The others are generally found at levels that are natural for ground water. However, most of them (except pesticides and nitrate) are frequently elevated near mining sites where a lot of soil disturbance has occurred, especially where acids have been added to leach out metals. A discussion is provided for each constituent to explain any concerns that may result from elevated concentrations in ground water.

What the Maps Represent – What these maps really represent is determined by what data are stored in the database and how the database query is made. What is included and what is excluded is equally important in reviewing the maps that follow. Here are the important criteria used for these maps:

- Only data in ADEQ's Water Quality Database were used in constructing these maps. The Database primarily contains data collected by ADEQ's Ambient Ground Water Monitoring Program and the Pesticides Contamination Prevention Program, with a little data from U.S. Geological Survey, the Salt River Project, and the Arizona Department of Water Resources.
- Although some data from Superfund cleanup sites has been entered into the database, this query excluded these data so as to not bias the results towards the areas known to be heavily contaminated. In other words, a disproportionate number of wells were sampled in these areas, so it would appear that these contaminated wells make up a larger proportion

of the state than they actually do.

- The data query was made for 10 years, from January 1, 1993 through December 31, 2002.
- All of the wells monitored for a specified constituent were shown.
- Only the data from the last time the well was monitored for that constituent was used.
- Since wells are sampled for varying constituents, the total number of wells sampled for each constituent varies.
- All results reported as "less than" the laboratory reporting level or "non-detection" were considered to be in compliance with Aquifer Water Quality Standards.

Ground Water Standards – The Aquifer Water Quality Standards used in this assessment are shown in **Appendix C**. Generally these ground water standards are identical to the Safe Drinking Water Standards established for public water systems, as well as surface water standards for the Domestic Water Source designated use.

Arsenic – Arsenic is a trace element usually occurring naturally in Arizona's ground water. This constituent is of particular interest since EPA has lowered the health-based, drinking water standard associated with arsenic from 50 µg/L to 10 µg/L effective in 2006. Studies have linked long-term exposure to arsenic in drinking water to cancer of the bladder, lungs, skin, kidney, nasal passages, liver, and prostate. Non-cancer effects of ingesting arsenic include cardiovascular, pulmonary, immunological, neurological, and endocrine (e.g., diabetes) effects.

In general, arsenic can contaminate drinking water through natural processes, such as erosion of rocks and minerals. Arsenic can also contaminate drinking water when used for industrial purposes. Approximately 90 percent of industrial arsenic in the U.S. is currently used as a wood preservative, but arsenic is also used in paints, dyes, metals, drugs, soaps, and semi-conductors. Agricultural applications, mining, and smelting also contribute to arsenic releases in the environment. Arsenic is found at higher levels in underground sources of drinking water than in surface waters, such as lakes, reservoirs, and rivers.

Arsenic concentrations in wells sampled in Arizona between 1994 and 2002 is illustrated on Figure 37. The map shows that sampling activity was focused in ground water basins in the southeast and northwest parts of the state, with limited sampling in other parts of Arizona. The graphic reveals the following patterns related to arsenic:

- Generally, sample sites exceeding the present arsenic drinking water standard of 50 µg/L (stars on the map) are found in the Casa Grande area, along the San Simon River and Gila River in the southeastern Arizona, and in scattered areas of Maricopa County. Some exceedances are also present near the communities of Bullhead City, Prescott, and Willcox. Only 3% of wells sampled exceeded the present standard (50 µg/L)
- 15% of the wells sampled will exceed the new standard (10 µg/L) (triangles on the map).
- When the standard is 10 µg/L, the most numerous exceedances will occur in the same areas as occurred under the present arsenic standards; however, almost all areas of the state tested show some degree of arsenic exceedances over the new 10 µg/L standard (triangles on the map).

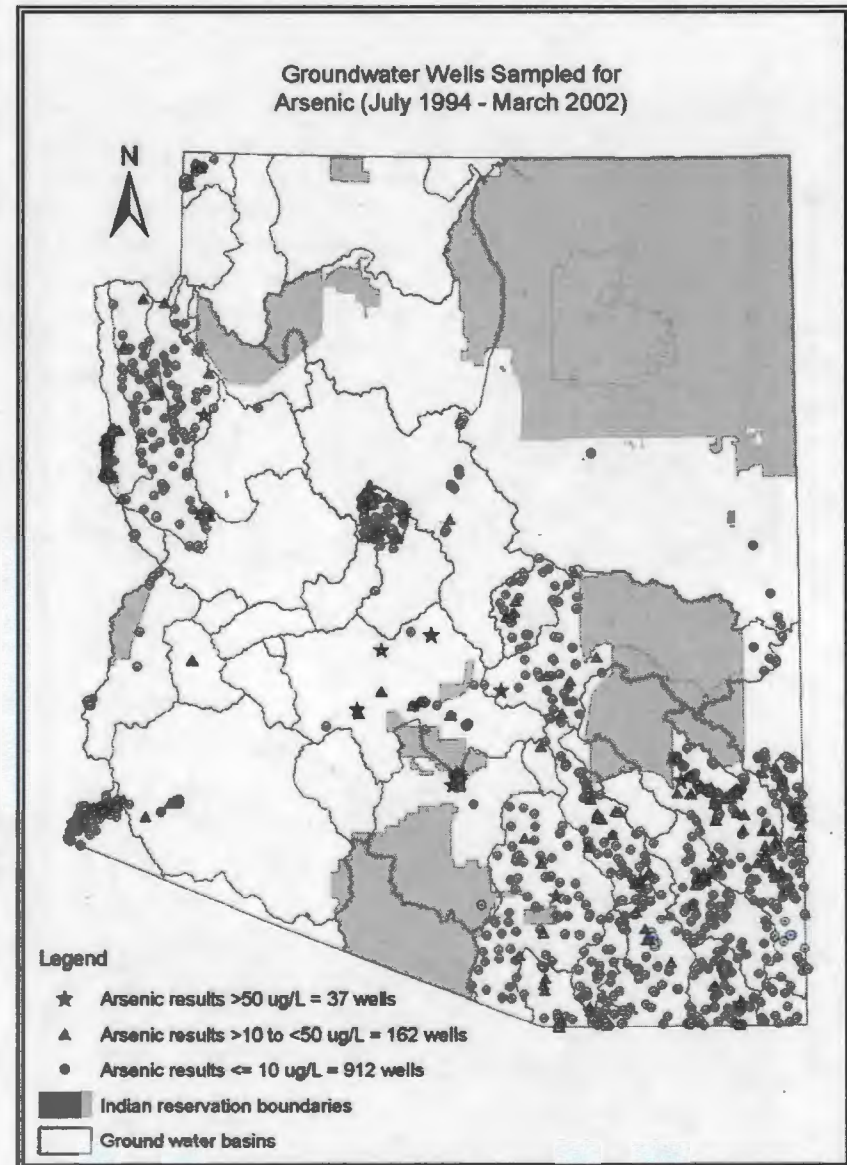


Figure 37. Arsenic Concentrations in Arizona Wells

Arsenic water quality exceedances occur in many different types of aquifers and many types of geology; however, they are most commonly found in soft, sodium-dominated waters that are located in chemically closed hydrologic systems. Thus, some of the most common places for arsenic exceedances are confined or artesian aquifers found in southeastern Arizona.

In a recent publication, *Technologies and Costs for Removal of Arsenic from Drinking Water*, EPA 2000, EPA reviews the types of treatment systems that can be used to remove arsenic. These can be grouped into four broad categories: precipitation process, adsorption process, ion exchange process, and separation (membrane) process. This document and more information about arsenic can be downloaded from EPA's website at www.epa.gov/safewater/arsenic.

Fluoride – Fluoride is another naturally occurring trace element in Arizona's ground water. Fluoride has both a health-based and an aesthetics-based water quality drinking standards associated. EPA has set a health-based water quality standard (or Primary Maximum Contaminant Level [MCL]) for drinking water at 4.0 mg/L. At concentrations higher than this standard, potential health effects include skeletal damage. The EPA has also set an aesthetic guideline (or Secondary MCL) at 2.0 mg/L, because higher levels may cause the mottling of teeth enamel.

Although fluoride at high levels is harmful, fluoride is essential for strong teeth and to prevent tooth decay; therefore, many municipal systems will add fluoride to the water (a process called fluoridation).

Fluoride levels in wells sampled between 1994 and 2002 is illustrated in Figure 38. The map reflects that sampling activity was focused in some ground water basins. This map indicates the following information about fluoride in Arizona:

- Fluoride monitoring was focused in ground water basins in the southeast and northwest parts of the state with limited sampling in other parts of Arizona.
- Approximately 4% of wells sampled by ADEQ exceeded the Primary MCL (4 mg/L) (stars on the map), while 17% of wells sampled exceeded the Secondary MCL water quality guideline (2 mg/L) (triangles on the map).

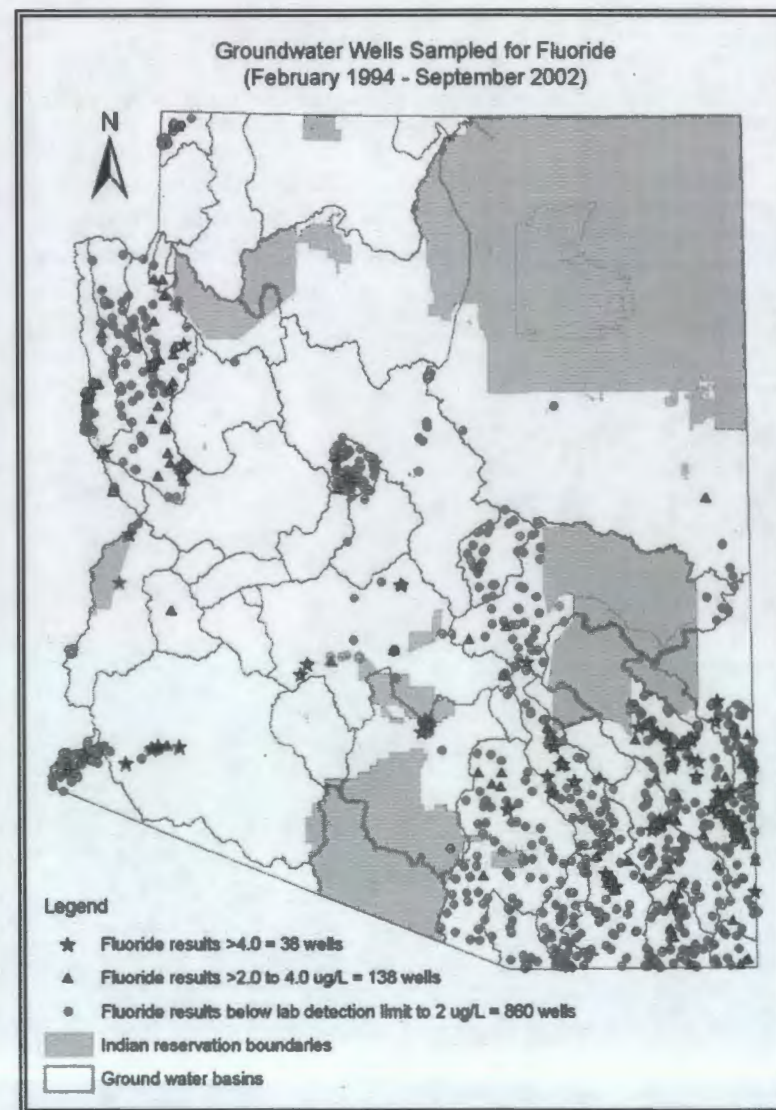


Figure 38. Fluoride Concentrations in Arizona Wells

- Generally, the highest fluoride levels are found in southeastern Arizona in the San Simon, Safford, Duncan, Willcox and San Pedro basins.
- In other parts of Arizona, fluoride concentrations are predominantly below both health and aesthetics-based water quality standards though isolated exceedances of both standards occur in northwestern Arizona and along the lower Gila River.

Most of these elevated levels are associated with confined or artesian aquifers that have chemically closed hydrologic systems. Calcium is an important control of higher fluoride concentrations. In these aquifers, calcium is removed from solution which may result in high concentrations of dissolved fluoride if a source of fluoride ions is available. High fluoride levels found in shallow floodplain wells is often attributed to upward water leakage from confined aquifers. Other sites in southeastern Arizona typically have fluoride concentrations below both health and aesthetics-based water quality standards.

Hardness — Hardness is an evaluation of certain chemical properties of water that originally represented the soap-consuming capacity of water. The term has now come to denote a more broad measure of the suitability of water for a number of domestic and industrial uses. Modern calculations of hardness usually report it as “calcium-carbonate hardness,” which is a measure of the calcium and magnesium dissolved in the water. There are no health or aesthetic-based water quality standards for hardness.

Several hardness classifications exist, but the one most appropriate to Arizona waters is as follows:

- | | |
|-------------------|-------------------|
| • Soft | (below 75 mg/l) |
| • Moderately hard | (75 to 150 mg/l) |
| • Hard | (151 to 300 mg/l) |
| • Very hard | (above 300 mg/l) |

“Soft” water, or water low in calcium and magnesium concentrations with sodium as the dominant cation, is desirable for the lack of scale it produces and for other aesthetic reasons. However, soft water has some potentially negative effects as well. For example, when used for irrigation, soft water can potentially create a sodium hazard in the soil which is damaging to the soil structure, especially when high levels of total dissolved solids (TDS) are present.

The softest water is typically found in very deep wells which produce water from confined or artesian aquifers. In contrast to hardrock aquifers, confined aquifers

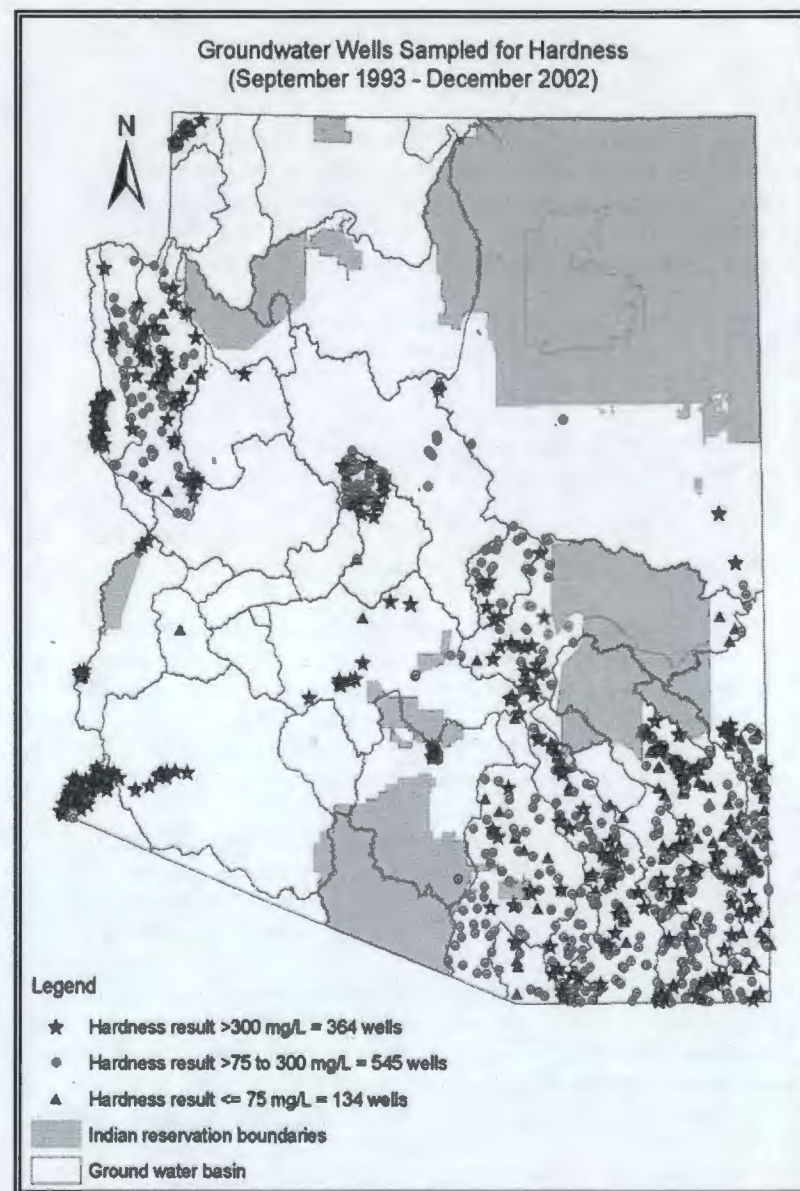


Figure 39. Hardness Concentrations in Arizona Wells

are often chemically closed hydrologic systems that favor the removal of calcium for sodium, producing the "soft" water. This type of soft water may also have elevated concentrations of trace elements such as fluoride and arsenic that may exceed health-based water quality standards.

In basin studies within Arizona, hardness concentrations are often significantly higher at wells located in mountain hardrock as compared with wells located in valley alluvium. Wells in mountain hardrock may have higher hardness concentrations because recharge water has traveled considerable distances underground through weathered, mineralized zones that may create elevated concentrations of dissolved salts and minerals.

The map showing hardness levels of groundwater sites in Arizona between 1993 and 2002 (Figure 39) illustrates the following about hardness concentration in Arizona:

- Sampling activity was focused on groundwater basins in the southeast and northwest parts of the state with limited sampling in other parts of Arizona.
- "Very hard" water is most common hardness level. Of the 1,043 groundwater sample sites:
 - 35% had "very hard" water (stars on the map),
 - 31% had "hard" water (circles on the map),
 - 21% had "moderately hard" water (also circles on the map), and
 - 13% had "soft" water (triangles on the map)
- "Very hard" water is particularly prevalent along the Virgin River near Littlefield, along the Gila River between Buckeye and Yuma, and the Colorado River between Bullhead City and Yuma. However, "very hard" water is found in many other areas throughout the state.
- In the northwest part of Arizona, in ground water basins around Kingman, ground water is generally "moderately hard" to "very hard." The Prescott Active Management Area shows a similar pattern.
- In southeastern Arizona, groundwater sites are more equally divided among the four groups: "very hard," "hard," "moderately hard," and "soft."

The map reflects that sampling activity was focused some of the ground water
Ground Water Assessments

basins, with limited sampling in other parts of Arizona.

Nitrate – In Arizona, nitrogen typically occurs as nitrate because of the oxidizing nature of most ground water. EPA has set a health-based water quality standard (or Primary MCL) for nitrate (as nitrogen) at 10 mg/L. Drinking water containing nitrate above 10 mg/L (as nitrogen) (may also be measured as 45 mg/L nitrate, as nitrate) should not be consumed by young children or nursing mothers because of possible methemoglobinemia, or "blue baby" health effects.

Nitrate (as nitrogen) concentrations may be divided into the following categories:

- Natural background (< 0.2 mg/L)
- May or may not indicate human influence (0.2 to 3.0 mg/l)
- May result from human activities (3.0 to 10 mg/l)
- Probably results from human activities (> 10 mg/l)

Occurrences of nitrate over 3 mg/L is frequently due to anthropogenic sources such as agricultural practices, septic systems, and other sewage disposal practices. However, some very deep wells in relatively pristine areas have been sampled that have nitrate concentrations over 3 mg/l that probably stem from natural soil organic matter. Thus, careful study must be undertaken before assigning a specific cause to elevated nitrate concentrations.

Figure 40 shows nitrate concentrations in wells sampled between 1994 and 2002. This map illustrates the following:

- Sampling was focused in ground water basins in the southeast and northwest parts of the state, with limited sampling in other parts of Arizona.
- Statewide, only 7% of wells sampled showed nitrate water quality standard exceedances (stars on the map).
- Generally, the highest nitrate concentrations tend to follow an arc starting in the Casa Grande area, through Buckeye, and finally through the lower Gila River area to Yuma. Fortunately, many of these elevated nitrate sites were sampled from shallow monitoring or irrigation wells that are not currently used for drinking water purposes.

- Other sites where nitrate exceeded health-based water quality standards are scattered around Arizona. Some of these can be attributed to shallow wells in other agricultural areas, monitoring wells in areas of dense septic systems use, or isolated windmills situated next to corrals. Most of these nitrate-impacted wells have a shallow depth to groundwater. Deeper wells, however, are not immune to anthropomorphic sources, especially where poor well construction and inadequate seals become routes for pollutants to directly enter the ground water.

Radiochemicals (Gross Alpha and Uranium) – Radioactive elements occur naturally in ground water across Arizona, though their concentrations can be dramatically altered by certain anthropomorphic activities such as hardrock mining. The most common radioactive parameters sampled by ADEQ include gross alpha and uranium. Each of these constituents has an associated health-based water quality standard, or Primary MCL. EPA has set a Primary MCL for gross alpha at 15 pCi/L and for uranium at 30 µg/L for drinking water. At concentrations higher than these standards, potential health effects include various types of cancer and kidney toxicity.

Figure 41 shows relative gross alpha and uranium concentrations in wells sampled between 1994 and 2002. This map illustrates the following information:

- Sampling activity was focused in some of the ground water basins, with limited sampling in other parts of Arizona.
- The map shows a much less dense number of radiochemical samples than other types of parameters. The likelihood of finding elevated radiochemicals, along with the cost of sample analyses, has focused the monitoring on a smaller number of wells within areas where radichemical concentrations are suspected to be high. Radiochemical constituents are more likely to be elevated in mountainous, hardrock areas, particularly in granitic geology; therefore, samples are typically targeted in these areas of granite rock. Samples collected in areas of floodplain alluvium and/or basin-fill have only rarely shown the presence of elevated radiochemical constituents.

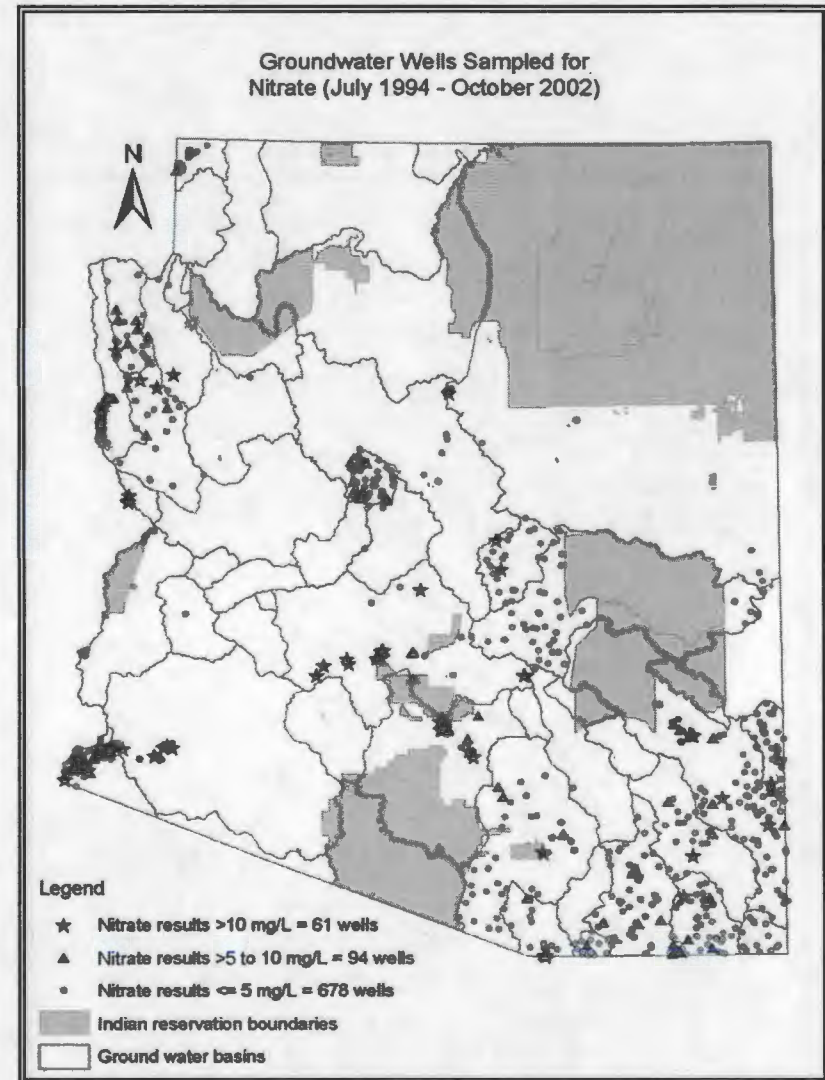


Figure 40. Nitrate Concentration in Arizona Wells

With this semi-targeting of sites, where radiochemical samples are collected, 20% of the wells had exceedances of either gross alpha or uranium standards (stars and triangles on the map).

- Most of the uranium exceedances occur in the Kingman area of northwest Arizona, particularly in the granitic areas of the Cerbat and Hualapai Mountains. The highest concentrations are found near the old mining town of Chloride. In such mining areas, a significant amount of rock containing radioactive elements has been exposed.
- Sample sites in southeastern Arizona have shown occasionally elevated levels of both uranium and gross alpha. Again, most of these exceedances are associated with granitic geology, with the highest levels typically around historic mining areas, such as the community of Dos Cabezas in the Dos Cabezas Mountains.
- Other areas of the state, such as along the Virgin River, in the Prescott AMA, and near Yuma show few, if any, radiochemical standard exceedances.

Total Dissolved Solids – Total dissolved solids, or TDS, is a way to measure the salinity of water. It is the sum of the cations and anions. Thus, this constituent is important because it provides a quick “snapshot” of an area’s water quality. While there are no drinking water, health-based water quality standards associated with this constituent, there are both drinking water aesthetic-based water quality guidelines as well as guidelines for irrigation use.

The US Geological Survey classifies water according to the following scale:

- | | |
|------------------------|------------------------|
| • Fresh | (below 1,000 mg/l) |
| • Slightly saline | (1,000 to 3,000 mg/l) |
| • Moderately saline | (3,000 to 10,000 mg/l) |
| • Very saline or briny | (> 10,000 mg/l). |

EPA has set an aesthetic guideline for drinking water (Secondary Maximum Contaminant Level or SMCL) at 500 mg/l for TDS. The TDS levels in water at higher levels than the SCML may cause an unpleasant taste in drinking water.

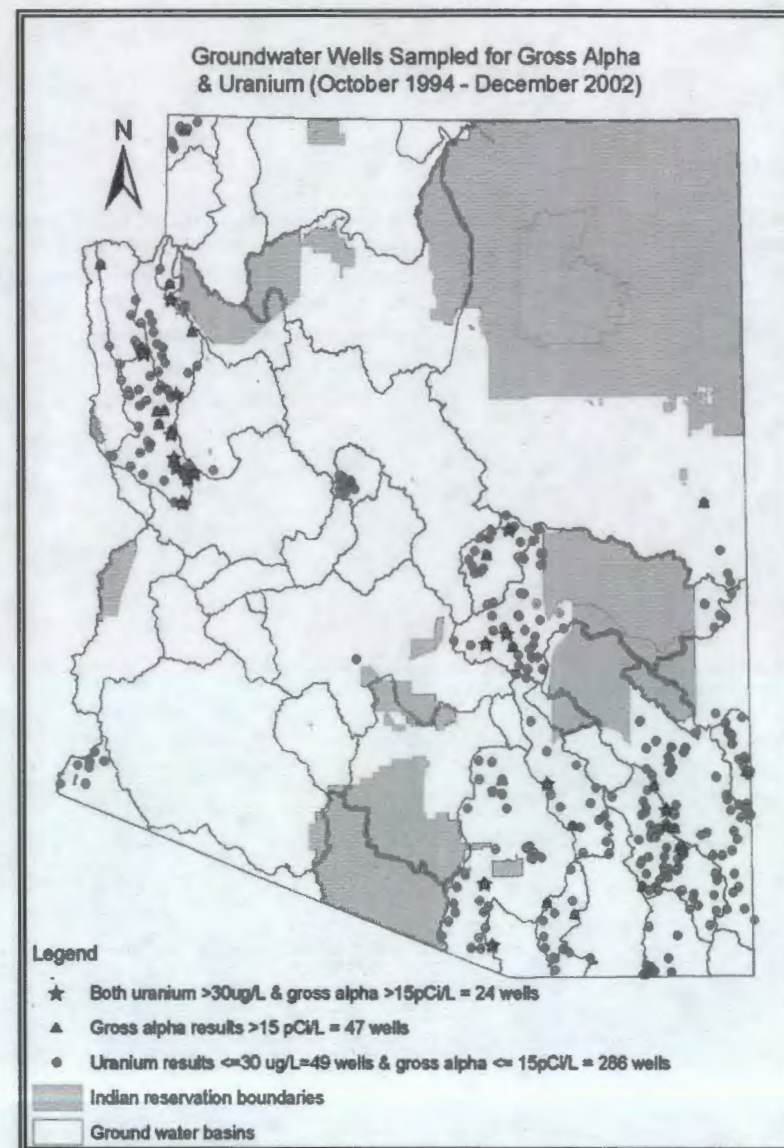


Figure 41. Gross Alpha and Uranium Concentrations in Arizona Wells

For irrigation purposes, the Salt River Project's annual water quality report recognizes that salinity has effects on crop yield according to the following scale:

- No problems with crop yield (< 500 mg/l)
- Increasing problems with crop yield (500 to 2000 mg/l)
- Severe problems with crop yield (> 2000 mg/l).

TDS levels in wells sampled between 1993 and 2002 is shown in **Figure 42**. This map illustrates the following information about TDS concentrations in Arizona:

- Sampling was focused in some of the ground water basins, with limited sampling in other parts of Arizona.
- Of the 1072 ground water sites sampled by ADEQ:
 - ▶ 53% had TDS concentrations below the Secondary MCL standard of 500 mg/L (circles on the map),
 - ▶ 37% were between 500 and 2,000 mg/L (triangles on the map), and
 - ▶ 10% were greater than 2,000 mg/L (stars on the map).
- Generally, the highest TDS levels are associated with agricultural areas along the Colorado, Gila, and Virgin rivers, as indicated by sampling near Buckeye, Fort Mohave, Littlefield, Safford, and Yuma (stars on the map).
- TDS levels in other parts of the state that were extensively sampled (such as southeastern Arizona, the Prescott AMA, and around Kingman) generally have levels below 2,000 mg/l, with the majority of sample sites below the 500 mg/l drinking water aesthetic guideline level.

Deterioration of ground water quality, as represented by increasing TDS levels, has been well documented in many studies. Salts present in the initial irrigation water applied become concentrated by evapotranspiration in the small amount of water that is recharged to the aquifer. These salt loadings on aquifers are exacerbated in river valleys, which typically have shallow ground water levels.

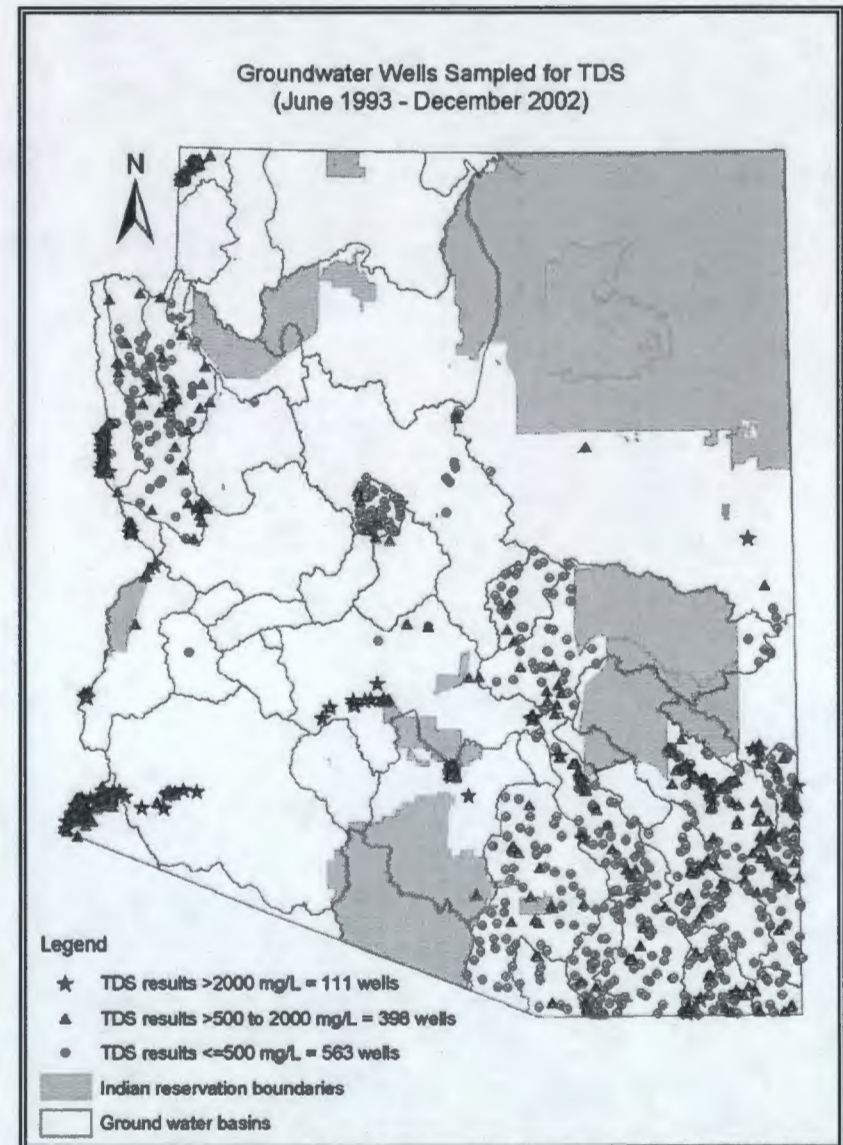


Figure 42. TDS Concentrations in Arizona Wells

VIII. Taking Care of Water Quality Problems

State and Federal Regulations

Federal and state laws provide a framework for comprehensive water quality protection. Three federal and state regulations provide the foundation for protecting Arizona's water resources:

1. **The federal Clean Water Act** – establishes a national goal to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. This act was amended in 1987 to include state nonpoint source management programs that address reduction of pollution associated with activities that do not have end-of-pipe discharge points and can have discharges that are dispersed over large areas (e.g., agriculture, urban runoff).
2. **The federal Safe Drinking Water Act** – requires that states develop programs to protect surface and ground water used for public drinking water systems through source water protection programs, and to ensure the delivery of safe water to these public systems.
3. **The Arizona Environmental Quality Act** – gives ADEQ authority to develop state environmental protection programs for both surface and ground water (e.g., Aquifer Protection Permits, drywell registration, Pesticide Contamination Program, installation and remediation of Underground Storage Tanks and ground water monitoring).

This section will discuss the following programs established to identify and mitigate surface water quality problems in Arizona:

- The Nonpoint Source Program,
- Surface Water Monitoring
- The Total Maximum Daily Load Program
- Watershed Management, including volunteer monitoring
- Grants and Outreach Program

Many other water quality protection programs (e.g., permits, compliance and enforcement), also protect and mitigate water quality problems. Information about these programs can be obtained at ADEQ's web site: www.aazdeq.gov. The Ground Water Monitoring Program was discussed in Chapter VII.

The Nonpoint Source Program

Early Clean Water Act programs concentrated on controlling point sources of pollution caused by discharges from large municipal and industrial sources. These programs achieved tremendous improvements in both ground water and surface water quality. Despite these accomplishments, much remains to be done to achieve the goals of the Clean Water Act and ensure that the nation's waters are "fishable" and "swimmable." In addition to point sources of pollution, Arizona's water resources continue to be impacted by nonpoint sources of pollution. Nonpoint source pollution is now considered the single largest cause of water pollution throughout the nation.

ADEQ works with federal, state, and local agencies, tribes, nonprofit organizations, the environmental community and local citizens to develop nonpoint source watershed management strategies to reduce nonpoint source pollution that degrades water quality. These management strategies rely on the cooperation of stakeholders that live within the watershed or have management responsibilities for the lands and the surface and ground water resources within. Arizona's Nonpoint Source Program relies on this type of cooperation, education and partnership as the primary method to reduce nonpoint source pollution and improve the state's water quality.

Arizona's Nonpoint Source Program focuses on the following land use activities that have been shown to negatively impact surface and ground water within the state:

- Agriculture
- Forestry
- Urban runoff
- Hydromodification
- Onsite/septic waste treatment systems
- Mining
- Recreation

The Nonpoint Source Program aims to address water quality issues, educate the public to build a better understanding of the remaining water quality challenges and solutions, promote a public stewardship ethic and commitment, and encourage public involvement and support for watershed protection programs. Arizona's Nonpoint Source Program integrates the state's Clean Water Act and

Safe Drinking Water Act programs with voluntary incentives. ADEQ uses a combination of tools including: surface and ground water monitoring, watershed inventories, watershed characterizations, Total Maximum Daily Load (TMDL) studies, TMDL implementation plans, public drinking water system source water assessment plans, watershed-based plans, and water quality improvement projects to protect the state's water resources from nonpoint source pollution.

ADEQ's staff works closely with stakeholders to develop community-led, watershed-based planning efforts. These local planning efforts assist the Department in developing programs and outreach activities appropriate to the specific area and the issues. Since Arizona has a large amount of publicly owned lands, partnerships with federal, state and tribal land and resource management agencies are a key element in the program's success.

The other programs described in this chapter, along with the ambient Ground Water Monitoring Program described in Chapter VII, comprise the core of the Nonpoint Source Program administered in Arizona.



Fences direct horses across Nutrioso Creek via a bridge to help reduce erosion of the streambanks and decrease sediment loads in the stream. The bridge and fences were constructed by a local rancher using water quality improvement grant funds awarded by ADEQ. The rancher has constructed off-channel drinkers as an alternate source of water for livestock.

Surface Water Monitoring

ADEQ's field personnel obtain water quality data that are used to assess the biological, chemical, and physical integrity of Arizona's rivers, streams, lakes, and reservoirs.

The primary objectives of this program are to provide credible data to support the following:

- Ongoing monitoring of the waters of the state as required by state law;
- Determination of water quality trends at long-term sites;
- Characterization of baseline water quality of surface waters located in selected watersheds according to the 5-year watershed monitoring schedule;
- Support for surface water quality assessments, identification of impaired surface waters, and the specific causes of impairment;
- Determination of compliance with applicable surface water quality standards;
- Determination of baseline water quality in the state's Unique Waters and whether water quality is being adequately protected or is being degraded; and
- Development of new water quality standards, especially for physical and biological integrity. For example, trend determination at regional biocriteria and habitat reference sites in support of bioassessments and to test indexes of biological integrity.

Fixed Station Network Monitoring – The core of the ambient water quality monitoring program is ADEQ's Fixed Station Network (FSN). This monitoring program's primary purpose is to characterize baseline water quality of perennial, wadeable streams and to provide data to determine long-term water quality trends. This program incorporates longer monitoring time frames (more than 20 years) and lower site densities than the Watershed Characterization Monitoring Program. ADEQ fixed sampling sites are sampled quarterly each year. Long-term fixed station sites have been established on wadeable, perennial streams in nine of the ten major watersheds in the state. USGS provides the fixed station sites in the 10th watershed -- the Colorado - Grand Canyon Watershed (see USGS below). Currently there are 28 ADEQ fixed station sites (**Figure 43**).

Analytical Suite

Analytes being tested will vary based on the monitoring purpose. The following suite of analytes are collected at ambient monitoring sites:

Field data: Dissolved oxygen, pH, specific conductance, stream flow, turbidity, air temperature, water temperature, site characteristics, photographs. For lakes add redox, secchi depth, depth (not flow), and chlorophyll a.

General chemistry: Specific conductance, pH, calcium, magnesium, sodium potassium, chloride, sulfate, fluoride, turbidity, total dissolved solids, total suspended solids, hardness, carbonate, bicarbonate, alkalinity (total and phenolphthalein). For lakes add chlorophyll a and algae identification.

Nutrients: Ammonia (as nitrogen), phosphorus (total as phosphorus), nitrate/nitrite (total as nitrogen), total Kjeldahl nitrogen.

Metals: Antimony, arsenic, barium, beryllium, boron (total), cadmium, chromium, copper, lead, mercury, manganese (total), selenium, zinc.

Bacteria: *Escherichia coli*.

In addition, suspended sediment concentration will be collected at all future ambient stream sites.

USGS Cooperative Fixed Station Network Monitoring -- For a number of years, ADEQ has participated in a joint funding agreement with the U.S. Geological Survey to operate the Cooperative Fixed Station Network monitoring program (USGS Co-op Program). The USGS conducts water quality monitoring at 19 USGS Co-op Program sites located on Arizona's larger rivers, which are of a size and annual flow that precludes ADEQ staff from the ability to monitor (Figure 43). USGS also maintains gage stations at these sites. Water quality data are collected quarterly at sites located on the Colorado River, Salt River, Gila River, Bill Williams River, and the Verde River.

Watershed Characterization Monitoring -- ADEQ has identified 10 major surface watersheds in Arizona. In 1998, ADEQ adopted a rotational watershed framework in which staff conducts water quality monitoring in wadeable, perennial streams located in two watersheds each year. All 10 watersheds are monitored over a 5-year cycle. The watershed schedule is shown in Table 42.

Table 43. Arizona's watershed cycle

WATERSHEDS	FOCUS YEARS 1999 - 2011										
	99	00	01	02	03	04	05	06	07	08	09
Bill Williams					X				X		
Colorado - Lower Gila					X					X	
Colorado - Grand Canyon						X*				X	
Little Colorado - San Juan			X					X			X
Middle Gila				X					X		
Salt				X					X		
San Pedro - Willcox Playa - Rio Yaqui		X					X				X
Santa Cruz - Rio Magdalena - Rio Sonoyta			X					X			X
Upper Gila		X					X				X
Verde	X					X			X		

Note: Staff conduct watershed monitoring on the state fiscal year calendar, which starts July 1st and ends June 30th of the following calendar year. For example, 2004 starts on July 1, 2003 and ends June 30, 2004.

*Monitoring in the Colorado-Grand Canyon Watershed was deferred in 2004 due to budget constraints.

The purpose of this monitoring is to obtain basic water quality data on streams and lakes in each watershed. Along with the analytical samples collected (see analytical suite text box), annual bioassessments and habitat assessments are made each spring to assess the health of the aquatic communities in wadeable, perennial streams.

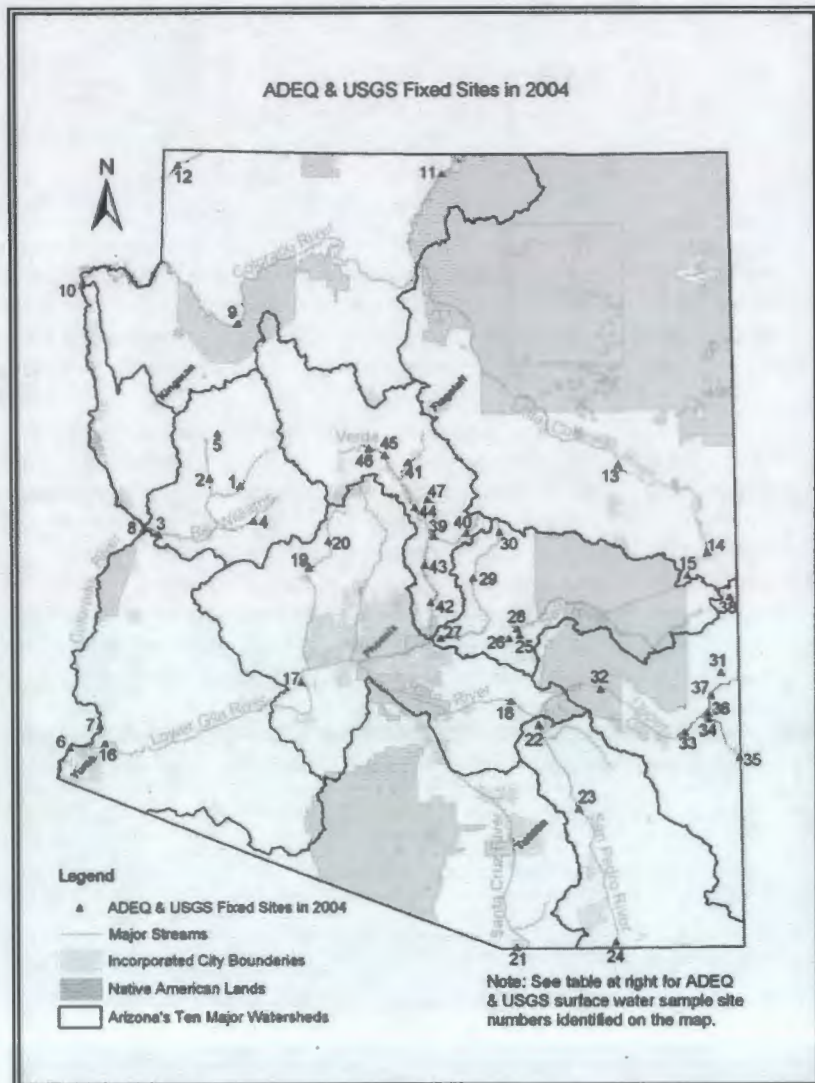


Figure 43. Fixed long-term monitoring sites

MAP #	STREAM NAME	SITE DESCRIPTION	AGENCY
1	Burro Creek	at Six Mile Crossing	ADEQ
2	Big Sandy River	above Highway 93 bridge	ADEQ
3	Bill Williams River	near Mineral Wash	ADEQ/USGS
4	Santa Maria River	below Highway 93 bridge	ADEQ
5	Trout Creek	near Wikieup	ADEQ
6	Colorado River	at Mexico above Morelos Dam	ADEQ/USGS
7	Colorado River	above Imperial Dam	ADEQ/USGS
8	Colorado River	below Parker Dam	ADEQ/USGS
9	Colorado River	above Diamond Creek	USGS
10	Colorado River	below Hoover Dam	USGS
11	Colorado River	at Lee's Ferry	ADEQ/USGS
12	Virgin River	at Littlefield	USGS
13	Little Colorado River	at Woodruff	ADEQ
14	Little Colorado River	below Springerville	ADEQ
15	West Fork Little Colorado River	at Govt Springs near Greer	ADEQ
16	Gila River	near Dome	ADEQ
17	Gila River	above Gillespie Dam diversions	ADEQ/USGS
18	Gila River	at Kelvin	ADEQ/USGS
19	Hassayampa River	at Box Canyon near Wickenburg	ADEQ
20	Hassayampa River	below Milk creek near Wagoner	ADEQ
21	Nogales Wash	at Morley Ave. Tunnel	ADEQ
22	San Pedro River	near Dudleyville	ADEQ
23	San Pedro River	at Cascabel	ADEQ
24	San Pedro River	at Palominas	ADEQ
25	Pinal creek	at Inspiration Dam	ADEQ
26	Pinto Creek	above Henderson Ranch Ford	ADEQ
27	Salt River	below Stewart Mountain Dam	ADEQ/USGS
28	Salt River	near Roosevelt Lake	ADEQ/USGS
29	Tonto Creek	above Gun Creek	ADEQ
30	Tonto Creek	below Christopher Creek	ADEQ
31	Blue River	at Juan Miller Road crossing	ADEQ
32	Gila River	near Calva	ADEQ/USGS
33	Gila River	at head of Safford Valley	ADEQ/USGS
34	Gila River	at Old Safford Bridge	ADEQ
35	Gila River	near Duncan	ADEQ
36	San Francisco River	below Clifton	ADEQ
37	San Francisco River	above Clifton	ADEQ
38	San Francisco River	above Luna Lake near Alpine	ADEQ
39	East Verde River	near Childs	ADEQ/USGS
40	East Verde River	at Perkinsville Bridge	ADEQ
41	Oak Creek	at Red Rock Crossing	ADEQ
42	Verde River	below Bartlett Dam	ADEQ/USGS
43	Verde River	below Tangle Creek	ADEQ/USGS
44	Verde River	at Beasley Flat	ADEQ
45	Verde River	near Clarkdale	ADEQ/USGS
46	Verde River	at Perkinsville Bridge	ADEQ
47	West Clear Creek	near Camp Verde	USGS

Unique Waters – As resources allow, surface water quality data are collected on Arizona's outstanding state resource waters or "Unique waters" during the Watershed Characterization Monitoring. Currently, there are 18 Unique Waters in Arizona. The goal of this program is to acquire enough water quality data to determine water quality trends in these Unique Waters, and therefore, determine whether state antidegradation requirements are being met (i.e., is water quality improving, being maintained, or degrading).

Biocriteria Program -- Bioassessment data are collected to support the development of Arizona's biocriteria program. ADEQ began research to develop a state biocriteria program in 1992, focusing on using macroinvertebrate communities to assess the biological health of the aquatic system. A warmwater and a coldwater Index of Biological Integrity has been developed for Arizona through this research. Currently, the Biocriteria Program monitoring effort is to test existing indices of biological integrity for warmwater and coldwater streams over a range of impaired conditions and sources of stressors.

Bioassessments and habitat assessments are conducted at biocriteria reference sites, ADEQ FSN sites, watershed sites, and unique water sites to develop Arizona's regional reference site network statewide and to monitor trends in reference conditions over time. The goal is to conduct bioassessments at a minimum of 10 biocriteria reference sites in each watershed each water year. Benthic macroinvertebrate samples in wadeable, perennial streams with suitable riffle habitats are collected during the spring index period (April, May, or June).



An ADEQ staff member conducts macroinvertebrate sampling with a kick net on the Little Colorado River near Springerville, Arizona.

Water Quality Improvement Programs

Lakes Program – Data and information on lake and reservoir water quality are collected by a team of field staff to identify water quality problems and determine potential sources of pollution. The overall objectives of the Lakes Program are to evaluate the water quality status of lakes and reservoirs by identifying natural and human-induced conditions affecting lake water quality and to develop feasible ways to maintain, protect, and restore lake water quality. Biological (algae and chlorophyll), chemical, and physical limnology data are collected to characterize baseline water quality conditions.

The Lakes Program also follows the 5-year watershed monitoring schedule to organize its monitoring activities. Monitoring resources are focused on lakes and reservoirs located within the two major watersheds that are identified for study each water year. The Lakes Program monitoring activities incorporate four basic approaches:

- Baseline water quality monitoring and assessment;
- Targeted monitoring to fill assessment gaps identified on the Planning List;
- TMDL analyses to diagnose and recommend the most feasible ways to improve lake water quality; and
- A criteria development project to classify lakes, that will lead to class-specific water quality standards to protect the lake resources.

Targeted Monitoring From the Planning List - The Planning List that is generated during the assessment process identifies monitoring data gaps. Those waters with an overall ranking of high would be scheduled for monitoring in the two years following assessment report. Medium or low priority waters would be addressed in the subsequent three years, with the objective of having sufficient monitoring data on all waters on the Planning List within the current five-year watershed cycle. However, the current drought in Arizona may delay obtaining sufficient data during critical conditions on some waters on the Planning List.

Targeted monitoring focuses efforts on those surface waters that show the most potential for impairment. These intensive monitoring efforts are designed to ensure monitoring captures seasonality, spatial and temporal variations, and suspected critical loading conditions.

The factors used to prioritize TMDLs are similarly used for the Planning List, except that no designated uses have been assessed as "impaired." Planning List prioritization considers:

- The number of exceedances compared to the number of samples taken,

and the potential for completing the sample collection necessary to make an assessment;

- Whether there are critical conditions (season, precipitation, activity in the watershed) when exceedances occur, so that sample collection is scheduled when these conditions are represented;
- Watershed monitoring rotation, when listed due to insufficient data rather than exceedances;
- Development of comprehensive watershed management plans; and
- Whether the surface water has been on the 303(d) List in the past.

Total Maximum Daily Load (TMDL) Program

ADEQ's TMDL Program must develop Total Maximum Daily Loads for each surface water identified as impaired. TMDLs must be initiated for surface waters identified as "high priority" within the first two years following list approval by EPA. All other waters ranking medium or low priority are scheduled for TMDL development within the next two 5-year watershed cycle. However, the fact that Arizona is in the fifth year of a drought poses a significant obstacle to the completion of scheduled TMDLs. Some impaired waters may flow only during precipitation events and have water quality problems which only appear during heavy storms.

A Total Maximum Daily Load Analysis (TMDL)

A TMDL is a written, quantitative plan and analysis to determine, on a pollutant specific basis, the maximum loading a surface water can assimilate and still attain and maintain a specific water quality standard during all conditions. The TMDL allocates the loading capacity of the surface water to point sources and nonpoint sources identified in the watershed, accounting for natural background and seasonal variation, with an allocation set aside as a margin of safety.

TMDL development leads to identification of a surface water load and waste load capacity for each pollutant. The final TMDL includes point source (waste load) allocations, nonpoint source (load) allocations, and load reductions necessary for attainment of water quality standards based on the critical conditions for loading. Records review, stakeholder interviews, field reconnaissance, field measurements, and modeling are performed to better understand the location, magnitude, and conditions causing the impairment. This process ultimately leads to an understanding of what needs to be done to reduce and prevent the impairment, and how long it might take the surface water to attain water quality standards.

The TMDL analysis starts with identification of the pollutants of concern and the water quality standards that must be attained to protect designated uses. Pollutant-specific numeric targets are set based on the most stringent water quality standard applicable to the surface water.

Source analysis then identifies the location and magnitude of point source and nonpoint source loadings. Point source waste loads are from discrete conveyances of discharge directly to a surface water (i.e. wastewater treatment plant outfall). Nonpoint source loads are from non-discrete discharges, including runoff generated by activities such as grazing, agriculture, mining and forestry. The TMDL also establishes the naturally occurring "background conditions" of the watershed, which are included in the nonpoint source load category.

A pollutant specific load capacity, which includes a margin of safety, is calculated based on flow characteristics and the numeric target (generally the applicable surface water quality standard). When the load capacity and sum of the sources' contributions during the critical condition are compared, load allocations and necessary load reductions can be determined.

Waste load reductions from point sources can be managed through permitting programs such as Arizona's Pollutant Discharge Elimination System (AZPDES). However, there are no regulatory programs for nonpoint pollution, so load reductions from these sources are strictly voluntary. In Arizona, most surface water impairment is a result of nonpoint source pollution. Nonpoint source pollution may include excessive sediment caused by the denudation of grasslands, the location of roads, construction, bacteria from wildlife and/or recreation, metals from historic mining practices and road cuts through ore bodies, and pesticides from historic agricultural practices.

Stakeholders are encouraged to participate throughout the TMDL process. For most impaired surface waters, achievement of water quality standards will occur through voluntary efforts such as participation in watershed management groups, volunteer monitoring, pursuit of funding for cleanup measures, and education.

The status of surface waters on Arizona's 2002 303(d) List is illustrated in Figure 44 on the next pages.

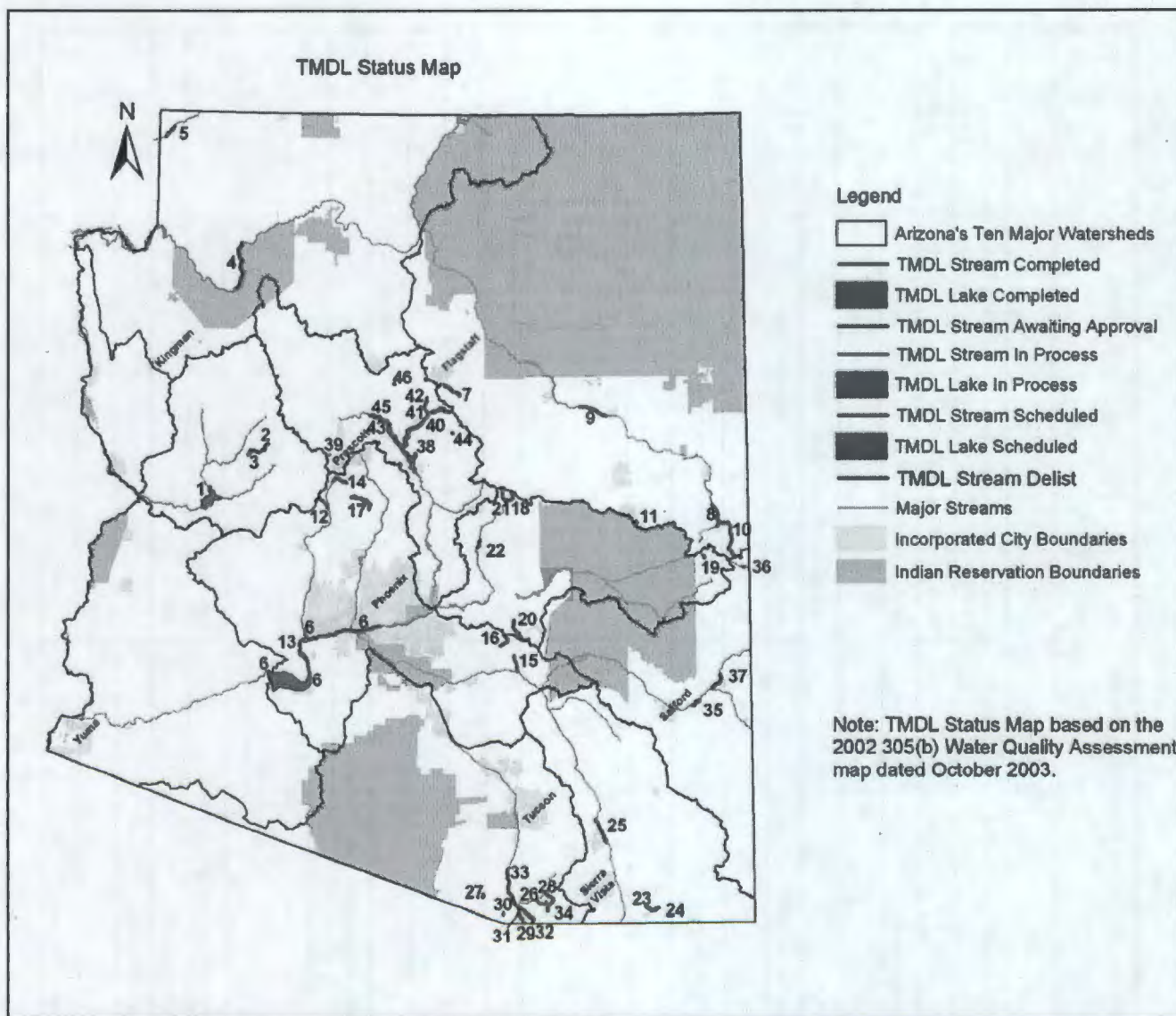


Figure 44. Status of TMDLs in Arizona (see following table for waterbody names)

Status of TMDL Development from 1998 - 2003 (for Figure 44)

Map #	Surface Water Name Segment Description Waterbody ID	Pollutants of Concern Causing Impairment	TMDL Status
Bill Williams Watershed			
1	Alamo Lake AZL15030204-0040	Mercury in fish tissue, high pH, sulfide, dissolved oxygen	In process. Delisting sulfide (change in standard). Delisting dissolved oxygen (attaining standards)
2	Boulder Creek, headwaters - Wilder Creek AZ15030202-006B	Fluoride	Delisting fluoride (change in standard)
3	Boulder Creek, Wilder Creek - Copper Creek AZ15030202-005A	Arsenic, copper, zinc	Awaiting EPA approval of TMDL
Colorado - Grand Canyon Watershed			
4	Colorado River, Parashant - Diamond Creek AZ15010002-003	Turbidity	Delisting turbidity (change in standard)
5	Virgin River, Beaver Dam Wash - Big Bend Wash AZ15010010-003	Turbidity, fecal coliform	Delisting turbidity and fecal coliform (changes in standards)
Colorado - Lower Gila Watershed			
6	Painted Rocks Borrow Pit Lake AZL15070201-1010	DDT metabolites, toxaphene, chlordane, low dissolved oxygen, fecal coliform	Scheduled. Delisting fecal coliform (change in standards)
Little Colorado - San Juan Watershed			
7	Lake Mary (upper) AZL15020015-0900 Lake Mary (lower) AZL15020015-0890	Mercury in fish tissue	In process
8	Little Colorado River, Water Canyon - Camero Wash AZ15020001-009, -010	Turbidity	Complete
9	Little Colorado River, Porter Tank - McDonalds Wash AZ15020008-017	Copper, silver	In process
10	Nutriso Creek, headwaters - Little Colorado River AZ15020001-017, -015	Turbidity	Complete
11	Rainbow Lake AZL15020005-1170	Nitrogen, phosphorus, pH	Complete
Middle Gila Watershed			
12	French Gulch, headwaters - Hassayampa River AZ15070103-239	Copper, manganese, zinc	In process. Delisting manganese (change in standards)
6	Gila River, Salt River to Painted Rock Res. AZ15070101-015, -014, -010, -009, -008, -007, -005, -001 Salt River, 23 rd Ave WWTP - Gila River AZ15060106B-001D Hassayampa River Below Buckeye Canal AZ15070103-001B Painted Rock Reservoir AZL15070101-1020	DDT metabolites, toxaphene, chlordane	Scheduled
13	Gila River, Centennial Wash - Gillespie Dam AZ15070101-008	Boron (Also included in list above for pesticides)	Scheduled
14	Hassayampa River, headwaters - Copper Creek AZ15070103-007	Cadmium, copper, zinc	Complete
15	Mineral Creek, Devils Canyon - Gila River AZ15050100-012B	Copper	In process
16	Queen Creek, headwaters - Superior Mine WWTP AZ15050100-014A	Copper	In process
17	Turkey Creek, headwaters - Poland Creek AZ15070102-036B	Cadmium, copper, zinc	In process

Map #	Surface Water Name Segment Description Waterbody ID	Pollutants of Concern Causing Impairment	TMDL Status
Salt Watershed			
18	Christopher Creek, headwaters - Tonto Creek AZ15060105-353	Turbidity	Delisting turbidity (change in standards)
19	Crescent Lake AZL15060101-0420	pH	Scheduled
20	Pinto Creek, headwaters - Ripper Springs AZ15060103-018	Copper	Completed. Phase II TMDL in process (shown as complete)
21	Tonto Creek, headwaters - Haigler Creek AZ15060105-013	Turbidity	Delisting turbidity (change in standards)
22	Tonto Creek, Rye Creek - Gun Creek AZ15060101-008	Turbidity	Delisting turbidity (change in standards)
San Pedro - Willcox Playa - Rio Yaqui Watershed			
23, 24	Mule Gulch, headwaters - Whitewater Draw AZ15080301-090A, -090B	Copper, zinc, low pH.	In process. (Reach has subsequently been resegmented.)
25	San Pedro River, Dragoon Wash - Tres Alamos Wash AZ15050202-002	Nitrate	Scheduled
Santa Cruz - Rio Magdalena - Rio Sonoyta Watershed			
26	Alum Gulch, headwaters - ephemeral reach AZ15050301-581A, -581B	Cadmium, copper, zinc, pH.	Complete
27	Arivaca Lake AZ15050304-0080	Mercury	Complete
28	Harshaw Creek, headwaters - ephemeral reach AZ15050301-025	Copper, zinc, low pH	Complete
29	Nogales and East Nogales Washes, Mexico border - Potrero Creek AZ15050301-011	Chlorine, turbidity, fecal coliform	Scheduled. Delisting fecal coliform (change in standard)
30	Pena Blanca Lake AZL15050301-1070	Mercury	Complete
31	Potrero Creek, Interstate 19 - Santa Cruz River AZ15050301-500B	Fecal coliform	Delisting fecal coliform (change in standard)
32	Santa Cruz River, Mexico border - Nogales International WWTP discharge AZ15050301-010	Escherichia coli, fecal coliform	Scheduled. Delisting fecal coliform (change in standard)
33	Santa Cruz River, Nogales International WWTP discharge - Josephine Canyon AZ15050301-009	Fecal coliform	Delisting fecal coliform (change in standard)
33	Santa Cruz River, Josephine Canyon - Tubac Bridge AZ15050301-008A	Fecal coliform, turbidity.	Delisting fecal coliform and turbidity (changes in standards)
33	Santa Cruz River, Tubac Bridge - Sopori Wash AZ15050301-008B	Fecal coliform	Delisting fecal coliform (change in standard)
34	Three R Canyon, headwaters - ephemeral segment AZ15050301-558A, -558B, -558C	Cadmium, copper, zinc, pH.	Complete

Map #	Surface Water Name Segment Description Waterbody ID	Pollutants of Concern Causing Impairment	TMDL Status
Upper Gila Watershed			
35	Gila River, Bonita Creek - Yuma Wash AZ15040005-022	Turbidity	Delisting turbidity (change in standard)
36	Luna Lake AZL15040004-0840	Dissolved oxygen, nitrogen, phosphorus, pH	Complete
37	San Francisco River, Limestone Gulch - Gila River AZ15040004-001	Turbidity	Delisting turbidity (change in standard)
Verde Watershed			
38	Beaver Creek, Dry Beaver-Verde River AZ15060202-002	Turbidity	Delisting turbidity (change in standard)
39	Granite Basin Lake AZL15060202-0580	Dissolved oxygen	Delisting (Investigation showed low dissolved oxygen was due to natural conditions during lake turnover).
40	Munds Creek, headwaters -Oak Creek AZ15060202-415	Nitrogen, phosphorus	Complete
40	Oak Creek, headwaters - Verde River AZ15060202-019, -018A, -018C, -017, -018	Nitrogen, phosphorus	Complete
41	Oak Creek, at Slide Rock State Park AZ15060202-018B	<i>Escherichia coli</i> , fecal coliform	Complete
42	Oak Creek, West Fork Oak Creek-Dry Creek AZ15060202-018A, B, and C	Turbidity	Delisting turbidity (change in standard and designated use)
43	Pecks Lake AZL15060202-1060	Dissolved oxygen, pH	Complete
44	Stoneman Lake AZL15060202-1490	Dissolved oxygen, pH	Complete
45	Verde River, unnamed tributary (15060202-065) - West Clear Creek AZ15060202-037, -025, -015, -001, and AZ15060203-027	Turbidity	Complete
46	Whitehorse Lake AZL15060202-1630	Dissolved oxygen	In process

Note that the map and table:

- Report on TMDLs completed after 1998
- Do not reflect 2004 303(d) Listing being sent to EPA, except where noting delisting,
- Show status on the map as "delist" only if all parameters are to be removed from the 303(d) List, while table may indicate that a parameter is being removed while others are remaining.
- Show status on the map as "complete," although the table indicates a Phase II TMDL has been initiated.

Watershed Management

ADEQ focuses on six watershed management activities, which will be discussed in this section:

- Development of water quality watershed-based management plans and watershed characterization studies, currently through the Nonpoint Source Education for Municipal Officials (NEMO) Project;
- Development of TMDL implementation plans;
- Coordination with local watershed groups across Arizona who are actively developing and implementing watershed-based plans and TMDL implementation plans;
- Volunteer monitoring
- Grants and outreach for available Water Quality Improvement Grants; and
- Regional 208 water quality planning.

Further information about these programs can be obtained at ADEQ's web site: <http://www.adeq.state.az.us>.

Watershed-based Management Plans and the NEMO Project — Based on EPA guidance (*Supplemental Guidelines for the Award of Section 319 Nonpoint Source Grants to States and Territories in FY 2003*), watershed-based plans must include nine key elements. Where the watershed-based plan is designed to implement a TMDL, these elements help provide reasonable assurance that the nonpoint source load allocations identified in the TMDL will be achieved. However, even if a TMDL has not yet been completed, EPA believes that these nine elements are critical to assure that public funds to address impaired waters are used effectively.

In broad terms, the elements that EPA requires for a watershed based plan are:

- | | |
|------------|------------------------------------|
| Element 1: | Causes and sources |
| Element 2: | Expected load reductions |
| Element 3: | Management measures |
| Element 4: | Technical and financial assistance |
| Element 5: | Information/education component |
| Element 6: | Schedule |
| Element 7: | Measurable milestones |
| Element 8: | Evaluation of progress |
| Element 9: | Effectiveness monitoring |

EPA funded a Nonpoint Source Education for Municipal Officials (NEMO) Project through the University of Arizona's Cooperative Extension Service. After experimenting with different ideas, University of Arizona and ADEQ agreed that this project would benefit Arizona most if the comprehensive characterization documents evolved into a watershed-based plans for the three target watersheds:

- Bill Williams Watershed,
- Verde Watershed, and
- Upper Gila Watershed.

The goals of this project are:

- Characterize the watershed (soils, slope, population, geology, etc.).
- Identify areas that are susceptible to water quality problems and pollution (point and nonpoint sources). The plans will not only identify 303(d) listed or non-attaining waters, but also identify those waters/areas that are vulnerable to degradation.
- Identify the sources that need to be controlled to protect or improve water quality.
- Identify the problem areas ADEQ and/or stakeholders should address through monitoring or project implementation. Identify pristine areas (i.e. unique waters or special areas of concern) that need to be protected.
- Identify management measures to be implemented to protect or improve/restore water quality. Where and why? Estimate costs of the potential management measures.
- Estimate the load reductions expected from the different management measures. Rank the management measures to demonstrate which measures are the most effective means for protecting or restoring water quality.

These watershed-based plans will include many of the same elements of a TMDL implementation plan but are written for a much larger area. The University of Arizona will also include implementation recommendations that will assist ADEQ in focusing on potential problems and problem areas. Once the plans are complete, the University of Arizona Cooperative Extension Service will educate local land-use decision makers and other stakeholders.

This project will greatly increase the agency's knowledge of the watershed and help to more effectively fund water quality grant projects in Arizona. By characterizing and understanding the dynamics of each watershed, these watershed-based plans will also help ADEQ with their TMDL and monitoring

efforts. Watershed characterizations will help the monitoring programs improve site selection and identify priority-planning sites.

TMDL Public Involvement and TMDL Implementation Plans -- ADEQ tries to proactively involve and educate the stakeholders affected by the TMDL process. The goal is to involve these stakeholders while the TMDL is being written, so that citizens are aware of the problems up-front and can realize their role in helping remedy the identified problems through development of a TMDL implementation plan.

After the load and wasteload allocations are established in the TMDL, corrective actions or changes in practices must be implemented in the watershed so that these allocations will be met in the future. TMDL Implementation Plans (TIPs) provide a strategy that explains how the allocations in the TMDL and any reductions in existing pollutant loadings will be achieved and the time frame in which compliance with applicable surface water quality standards is expected to be achieved. These plans may include a phased process with interim targets for load reductions.

Based on EPA guidance, each implementation plan includes the following components:

- A description of the Best Management Practices, or other management measures, and associated costs that must be implemented to achieve the load reductions estimated in the plan (recognizing the natural variability and the difficulty in predicting the performance of the practices over time). An identification (using a map or a description) of the critical areas where those measures are needed.
- An action plan for implementing the management measures identified in the plan. This would include a schedule of interim, measurable milestones for determining whether the management measures or other control actions are being implemented effectively.
- A description of methods that will be used to evaluate the progress and effectiveness in achieving the plan goals.
- An information/education component that will be used to enhance public understanding of the project and encourage their early and continued participation in selecting, designing, and implementing BMPs.

- An estimate of the amounts of technical and financial assistance needed, associated costs, and/or the sources and authorities that will be relied upon, to implement the plan.

TMDL Implementation Plans use the information contained in the TMDL to develop a plan that encompasses the entire area causing known or potential pollution and contributing to the impairment. Scale varies depending on the causes and sources of contamination. Through active public involvement during the TMDL development, by the time the TMDL is completed, a TMDL Implementation Plan should also be written.

Development of these plans are to be community-led, when possible, and focus on encouraging volunteer groups to lead the way in implementing water quality improvement projects through the use of ADEQ's Water Quality Improvement Grant Program or other funding sources. The goal is to make sure that all of Arizona's waterbodies are clean and safe for uses such as swimming or fishing.



TMDLs for arsenic, copper and zinc are near completion on this reach of Boulder Creek, near Bagdad, Arizona. The Hillside Mine tailings piles in the background are major contributing sources of metals in the stream. Implementation plans are in the planning stages.

How Can I Get Involved?

Watershed Groups – The importance of working with interested participants at the watershed level cannot be overstated. It is important that all affected parties clearly understand the issues impacting water quality. Successful strategies to improve water quality need to be tailored to the social and hydrological reality within each watershed or drainage area.

Watersheds are geographic areas with natural boundaries that do not correspond with political boundaries. City, county, state, and federal jurisdictions can be a maze of legal and political perspectives, as well as different and diverse management goals to work through. For any comprehensive watershed approach to have long term success, it must involve private and public landowners, numerous political jurisdictions and coalitions of special interest groups. Through federal, state, and local partnerships, the goal of providing a cleaner, safer environment and ensuring its integrity for future generations can be achieved.

Successful watershed management strategies must rely on the cooperation of all stakeholders that live within the watershed or have management responsibilities for the lands and the waterbodies within. ADEQ relies on this type of cooperation, education, and partnership as the primary method to reduce nonpoint source pollution and improve the state's water quality. A list of active watershed partnerships in Arizona is provided in **Table 43** on the next page. These groups vary in their purpose and scope of concern, as some groups were established primarily for oversight for a specific TMDL, while others have more long-standing concerns about water quality and water quantity in their watershed.

By involving local communities, tribes, and private-sector organizations, Arizona is focusing and prioritizing restoration activities to achieve significant improvements in water resources, aquatic ecosystems and watershed health.

More information can be found at:

<http://www.azdeq.gov/comm/download/water>.

Volunteer Monitoring – Across the nation, volunteer groups monitor the condition of streams, rivers, lakes, reservoirs, estuaries, coastal waters, wetlands, and wells. They do this because they want to help protect a stream, lake, or wetland near where they live, work, or play. Their efforts are of particular value in providing quality data and building stewardship of local waters.

Volunteers can make visual observations of habitat, land uses, and the impacts of storms, measure the physical and chemical characteristics of waters and assess

the abundance and diversity of living creatures, including aquatic insects, plants, fish, birds, and other wildlife. Volunteers can also clean up garbage-strewn waters and become involved in restoring degraded habitats. The number, variety, and complexity of these projects continues to increase.

During the next year, ADEQ will be devoting efforts to develop a Volunteer Monitoring Program. Volunteer groups across Arizona will be able to collect data to supplement the water quality information collected by ADEQ. The volunteer data can be used by ADEQ to: screen water for potential problems, further research or restoration efforts, establish baseline conditions or trends for waters that would otherwise go unmonitored, and help evaluate the success of Best Management Practices implemented to mitigate problems. Helping volunteer groups to collect credible and scientifically defensible water quality data is important since ADEQ, like many other organizations, must continue to do more with less resources in both personnel and funding.

Since 2003, ADEQ has been working closely with GateWay Community College in Phoenix, Arizona, to develop a modular water quality curriculum to train volunteers and others in proper sampling techniques, development of Sample and Analysis Plans and Quality Assurance Plans, and care and maintenance of equipment. The goal is to have a curriculum that can be tailored to the specific needs of the group while providing ADEQ with valuable water quality information.

ADEQ looks forward to working with volunteer monitoring groups. This coordination will also ensure, to the extent practical, that the groups collect data that meet Arizona's credible data requirements in the Impaired Water Identification Rule (Arizona Administrative Code R18-11-6) and can therefore be used to assess the status of water quality in Arizona's surface waters.

Table 44. Arizona watershed partnerships

Name of Partnership	Watershed Area	Primary Objectives	When and Where Meeting	Contact
Bill Williams Watershed				
Upper Bill Williams	The Upper Bill Williams watershed area is approximately defined by the Kirkland Creek watershed, a 405 square mile drainage, which is tributary to the Santa Maria River.	<p>Mission is to manage and protect the water resource, water quality, and water rights. Advocates local control over our water resources and land use. Objectives are:</p> <ul style="list-style-type: none"> - Ensure that surface and ground water resources are maintained at the current balance, to support irrigation, ranching, and domestic uses, as well as maintain excellent waterfowl and wildlife habitat. - Disseminate information so that citizens are well-informed of events and legislative activity that may impact them. - Cooperate with other rural watershed groups to influence favorable water legislation for rural areas. 	3 rd Thursday of the month Skull Valley Community Center	Sondra Wilkening, secretary, (928) 925-6434 westwindsinc@yahoo.com Troy Suter (928) 442-3885
Colorado - Grand Canyon Watershed and Colorado - Lower Gila Watershed				
Northwest Arizona Watershed Council	The area is defined by three groundwater basins: Hualapai Valley Basin and Sacramento Valley Basin in the Colorado - Grand Canyon, and the Big Sandy Basin in the Colorado - Lower Gila Watershed	Goal is to protect and preserve water and educate the public. The council recognizes the need for more information to adequately model supply and demand equations and relate these to general plans for development. Identifies and cleans up illegal dumping and other nonpoint source pollution.	Mohave County Public Library, 3269 N. Burbank, Kingman, Az. 4 pm 3 rd Wednesday of the month	Elna Roundy (928) 757-2818 Earl Engelhardt (928) 692-1068 imspirit@kingmanaz.net
Little Colorado - San Juan Watershed				
Little Colorado River Multi Objective Management Group (LCR MOM)	This immense watershed covers nearly 27,000 square miles in northeast Arizona and northwest New Mexico.	<p>The LCR MOM vision is to maintain and enhance the quality of life in this watershed through science and tradition based management of natural resources, in a way that ensures equity among shared interests, respects diverse cultural values, preserves environmental health of our land, while promoting appropriate economic growth and financial security of present and future generations.</p> <p>The focus issues include:</p> <ul style="list-style-type: none"> - Cultural resource preservation; - Economic development and recreation; - Education outreach; - Erosion and sediment control; - Flood loss reduction; - Water quality and quantity improvement; and - Watershed management enhancement. 	Every other 3 rd Wednesday, for 2 days Holbrook or Winslow	Jim Boles (928) 289-2422 Dennis Chandler (928) 524-6063, Ext.5 dennis.chandler@az.usda.gov
Show Low Creek	Show Low Creek drainage from Pinetop Springs and Thompson Springs to Fools Hollow Lake.	This grass roots group works to effect changes that will benefit the water quality and quantity. They are a member of the LCR MOM.	Meet on an as needed basis.	Tom Thomas (928) 368-8885 thomas@ci.pinetop-lakeside.az.us
Silver Creek Advisory Commission	The Silver Creek drainage area	They are a member of the LCR MOM.	2 nd Monday of the month Holbrook	Ron Solamon (928) 536-7366 Kerry Ballard (928) 536-2539 kballard@usa.net

Name of Partnership	Watershed Area	Primary Objectives	When and Where Meeting	Contact
Upper Little Colorado River Watershed Partnership	The Little Colorado River drainage above Lyman Lake	They are a member of the LCR MOM.	3 rd Thursday of the month. Springerville	Bill Greenwood (928) 333-4128 (x-226) bgreenwood@eagar.com
Middle Gila Watershed				
Tres Rios River Management Group Federally sponsored by the US Army Corp of Engineers and locally sponsored by the City of Phoenix.	Watershed is the Salt River and Gila River drainage delineated by approximately Southern Ave (north), Baseline Ave (south), 83 rd Ave (east), and Agua Fria River (west).	The issues identified by this group include: - Stressors identified (inorganic and organic chemicals, pesticides, PBCs, and low dissolved oxygen); - Flood flows; - Agricultural storm water runoff; - Agricultural irrigation drainage and dewatering; - Concentrated animal feeding operation discharges; - Wastewater treatment plant discharges; - Landfill leachate; - Ground water inflow; - Sand and gravel area releases; and - Degradation of wildlife habitat.	Steering committee meets on the third Wednesday of the month.	Alice Brawley-Chesworth (City of Phoenix) (602) 262-1828 alice.brawleychesworth@phoenix.gov
Upper Agua Fria Watershed Partnership	Agua Fria River drainage area, excluding the Prescott AMA and the Phoenix AMA.	Water quality and water quantity issues identified by this group include: fast growth and development in the Prescott AMA; ranching/grazing issues; leaking underground storage tanks; illegal dumping along streams and in the National Monument; and water legal rights.	2 nd Tuesday of the month, meeting usually at Arcosanti	Mary Hoadley (928) 632-7135 earthhous@aol.com
Salt Watershed				
Friends of Pinto Creek	Pinto Creek is a tributary to the Salt River and Roosevelt Lake.	Dedicated to the preservation of Pinto Creek, Powers Gulch, and Haunted Canyon.	Meet as needed	Tom Sonandres 623 583-6764 pintocreek@asu.edu
Northern Gila County Water Planning Alliance (a.k.a. Mogollon Highlands)	Watershed is bounded by the Mogollon Rim to the north, Roosevelt Lake to the south, Sierra Ancha Mountains to the east, and Mazatzal Mountains to the west.	The Northern Gila County Water Plan Alliance formed to develop water strategies for the area around Payson, Pine and Strawberry along the Mogollon Rim. The area also is known as the Tonto Creek basin.	1 st Thursday of the month Star Valley	Ron Christensen, Chair (928) 474-2029 Lionel Martinez, Rim Trail Water Improvement District (928) 474-2029 Howard Matthews, Pine-Strawberry WID (928) 476-2142 Robert Mawson, Program Coordinator, (928) 473-2233 rmawson@cableone.net

Name of Partnership	Watershed Area	Primary Objectives	When and Where Meeting	Contact
San Pedro - Willcox Playa - Rio Yaqui				
Campomoch-Sacaton Watershed Group	Watershed is a 42,000 acre sub-watershed of the Willcox Playa including: Gillman Canyon, Apache Canyon, Reservoir Canyon, Sacaton Wash, an unnamed drainage (referred to as Big Draw) and Campomoch Draw. This area falls almost entirely within the ranch boundaries of Hook Open A Ranch and Redtail Ranch.	The group's primary objective is to implement conservation practices that will improve watershed health, improve water quality, and reduce downstream flood damages. Practices are specifically aimed at reducing soil erosion and water runoff, increasing ground cover, and improving wildlife habitat to reduce negative economic impacts.	Quarterly meetings at Willcox	Donna Matthews (520) 384-2229, ext 122 donna.mathews@az.usda.gov Dan Skinner at dskinner@goldtechind.com
Upper San Pedro Partnership	1,875 square mile basin from the Mexico border north to "the Narrows." The Huachuca, Mustang, Whetstone, and Rincon Mountains form the basin's western boundary and the Mule, Dagoon, Little Dagoon, and Winchester Mountains form the eastern boundary.	Purpose of the partnership is to coordinate and cooperate in the identification, prioritization and implementation of comprehensive policies and projects to assist in meeting water needs in the Sierra Vista Sub-watershed of the Upper San Pedro River Basin.	2 nd Wednesday of the month Sierra Vista	George Michael, Coordinating manager (520) 378-4046 gmichael2@mindspring.com Bob Strain, Chairman Advisory Council 520 459-4763
Middle - Lower San Pedro Partnership	San Pedro River drainage area, between the Narrows near Charleston, Arizona, and its confluence with the Gila River at Winkelman, Arizona.	This grass roots group works to effect changes that will benefit the water quantity and quality.	Meetings as needed	Resource Conservation and Development Agency: Sharon Reid (520) 586-3347 spvnrcd@theriver.com
Santa Cruz - Rio Magdalena - Rio Sonoyta Watershed				
Friends of the Santa Cruz River	Watershed includes the entire Santa Cruz River; however, the group generally focuses on the stretch from the international border to the Santa Cruz County - Pima County boundary.	Major issues of concern being addressed by this group include: - Maintaining existing flow, ground water pumping, and population growth demands; - Flood control and land uses; - Impacts on water quality of land uses, off road vehicles, public access, illegal dumping; - Monitoring water quality; - Understanding economics and resource management; - Maintaining wilderness experience, cultural and historic uses, river oasis, habitat improvements, control of exotic species, and protection of endangered species; and - Weaknesses in international planning and cooperation.	3 rd Thursday of the month Tubac	Ben Lomeli, President (520) 281-4904
Pima Association of Governments (PAG) Watershed Planning Subcommittee	Santa Cruz River watershed, focusing on the portion within Pima County.	The subcommittee provides a forum for exchanging information among stakeholders, conducting technical review of proposals and plans, and advising decision makers on matters affecting the Santa Cruz River watershed. The subcommittee coordinates with PAG's Stormwater Management Working Group and reports to PAG's broader Environmental Planning Advisory Committee.	Quarterly meetings - 3 rd Thursday of first month of quarter 177 N. Church, Tucson	website: http://www.pagnet.org/WQ/participation.htm e-mail: wq@pagnet.org

Name of Partnership	Watershed Area	Primary Objectives	When and Where Meeting	Contact
Upper Gila Watershed				
Gila Watershed Partnership	Gila River Watershed is about 6,000 square miles, extending from the New Mexico border to the Coolidge Dam (San Carlos Reservoir).	Objectives: - Conserve natural resources and enhance the environment, while maintaining or improving the economy; - Increase water quality and improve water quantity; - Increase recreational opportunities; and - Collaborate among partners and neighbors in New Mexico and the San Carlos Apache Tribe within the watershed.	2 nd Tuesday of the month in Graham County General Services building in Safford.	Jan Holder (928) 348-4577 watershedholder@yahoo.com
Eagle Creek	Eagle Creek is a sub-watershed within the Upper Gila Watershed.		As needed on Saturdays	Chase Caldwell, (480) 635-1245
Verde Watershed				
North Central Arizona Regional Watershed Consortium (NCARWC)	Verde River Watershed, largely defined by Yavapai County boundaries.	Formed to accomplish cooperative regional water management and reduce argument over water rights. Believes that a unified and knowledgeable voter base in rural Arizona may be able to effect the needed changes in Arizona water laws and statutes.	Meeting times and places vary. Contact president (currently Barbara Litrell).	Barbara Litrell, President (928) 649-0135 blitrell@aol.com Bill Goss bill@billgoss.net Anita Rochelle anitar772002@yahoo.com
Northern Gila County Water Plan Alliance (See the Salt Watershed)				
Oak Creek Canyon Task Force	Oak Creek is a sub-watershed of the Verde River.	Task Force goals: - Conserve natural resources and enhance the environment for wildlife and human uses; - Sustain and improve recreational opportunities; - Improve water quantity and quality; - Reduce damage due to storms, floods, human activities, or natural disasters; and - Engage public and governmental involvement through outreach and education.	2 nd Thursday of the month Sedona	Barry Allen (623) 551-8804 nelsenallan@earthlink.net Morgan Stine morgan@direcway.com
Stoneman Lake Property Owners Association	This closed basin (no outflow from the lake) is a 900 acre lake drainage area, located 40 miles south of Flagstaff.	Mission is to preserve the pristine environment that is Stoneman lake and to foster harmony and cooperation among neighbors to maintain the peace and tranquility so highly valued in the community.	Meeting times and places may vary.	Chris Estes, President (480) 585-5772 cklestes@msn.com Bill McPeters, V. Pres (602) 431-1513 wedigit@juno.com
Verde Watershed Association	Verde Watershed	Goals: - Conserve natural resources and enhance the environment; - Sustain, improve, and diversify recreational opportunities; - Improve water quality and quantity; - Sustain, enhance, and improve the environment for wildlife; - Reduce damage from storms, floods, and human-made activities and/or natural disasters; and - Engage public and governmental involvement through public outreach and education.	3 rd Tuesday of the month Prescott, Cottonwood, Camp Verde (varies)	Robert Hardy (928) 634-5526

(Watershed information obtained from Arizona Dept. of Water Resources 2004)

What Funds are Available to Improve Water Quality?

Numerous funding sources can be used for projects that improve water quality in Arizona. Three of those funds are detailed below.

Water Quality Improvement Grants -- ADEQ distributes grant funds under Section 319(h) of the federal Clean Water Act to both public and private entities within Arizona. These grants are to implement on-the-ground water quality improvement projects that address nonpoint sources of pollution.

Grant applications that contain activities identified in a watershed-based plan (or equivalent plan) are given priority over other projects.

For a grant application to be considered eligible for evaluation, the application must comply with the process described in the current *Water Quality Improvement Grant Program Manual*, and the project description must indicate how all of the following will be accomplished:

- Improve, protect or maintain water quality in a waterbody in Arizona by addressing a nonpoint source of pollution;
- Demonstrate acceptable water quality management principles, sound design, and appropriate procedures;
- Yield benefits to the state at a level commensurate with project costs;
- Have an on-the-ground implementation component within Arizona;
- Provide for at least 40% of the project costs as non-federal match;
- Support the ADEQ, Water Quality Division Mission; and
- Be eligible under applicable state and federal regulations.

The Water Quality Improvement Grant Manual provides details about the grant program and includes the application forms. For more information about the Water Quality Improvement Grant Program or to be added to the mailing list, please contact Jean Ann Rodine, grant coordinator, at (602) 771-4635 or, toll-free in Arizona, (800) 234-5677, Ext. 771-4635, or email at: Rodine.Jean@azdeq.gov. Additional information can also be found on the internet at <http://www.azdeq.gov/environ/water/mgmt/planning>.

Water Protection Funds -- In 1994, the Arizona Water Protection Fund was established to implement projects that would maintain, enhance, and restore rivers, streams, and associated riparian resources, including fish and wildlife that are dependent on these habitats. In previous years, the legislature has provided \$5,000,000 annually in grants to fund proactive incentives to implement water quality and water quantity restoration actions. However, in 2003, funding was

limited to \$2,000,000 due to deficits in the state budget.

Any individual, entity, state or federal agency, or political subdivision of Arizona may submit an application to the Arizona Water Protection Fund Commission. For further information, please contact the commission at (602) 417-2400 extension 7016.

Clean Water and Drinking Water Revolving Funds -- The Water Infrastructure Finance Authority of Arizona (WIFA) is an independent agency of the state. It is authorized to finance the construction, rehabilitation and/or improvement of drinking water, wastewater, wastewater reclamation, or other water quality facilities/projects. Generally, WIFA offers borrowers below market interest on loans for 100% of eligible project costs from the following funds:

- Clean Water Revolving Fund (CWRP) for eligible publicly-held wastewater facilities,
- Drinking Water Revolving Fund (DWRP) for eligible publicly- and privately-held drinking water systems; and,
- Technical Assistance Program (TAP) Pre-design and design grants and loans for eligible wastewater and drinking water systems.

WIFA also manages a Technical Assistance Program. The program offers pre-design and design grants to eligible wastewater and drinking water systems under 10,001 population. Pre-design and design loans are available to all eligible systems. The purpose of the Technical Assistance Program is to enhance project readiness to proceed with a WIFA project construction loan.

Regional 208 Water Quality Management Planning

Areawide Waste Treatment Management Planning was authorized by the Clean Water Act Section 208 in 1972. It requires regional planning agencies to develop comprehensive water quality management plans. These plans require existing and proposed wastewater treatment facilities to meet the anticipated municipal and industrial waste treatment needs of an area over a 20-year period, as well as provide general planning guidance for nonpoint source, sludge, storm water and other activities. The plans assure attainment of the state's water quality standards.

Currently, the Designated Planning Agencies are: Maricopa Association of Governments (MAG), Pima Association of Governments (PAG), Northern Arizona Council of Governments (NACOG), Central Arizona Association of Governments (CAAG), Southeastern Arizona Governments Organization (SEAGO), and La Paz, Mohave and Yuma Counties.

The Watershed Management Unit's 208 Program is responsible for three main tasks:

- Conducting 208 Consistency Reviews that assure that the proposed facility or usage will be consistent with the existing Certified Regional Water Quality Management Plan,
- Coordinating water quality management plan amendment approvals, and
- Providing technical support and outreach to regional planning agencies in developing comprehensive Water Quality Management Plans.

This outreach includes participation in the Water Quality Management Working Group bi-monthly meetings. The working group consists of the eight Designated Planning Areas and various state, federal or local entities involved in regulatory water quality planning. They meet bi-monthly to review plan amendments and make recommendations to ADEQ on regulated water quality management issues. ADEQ continues to work with the Designated Planning Areas on incorporating a watershed-based approach to the 208 process. These watershed-based discussions also encourage the Designated Planning Areas to begin focusing more efforts on the nonpoint source side of the program; however, this is a slow process, as water pollution problems often span more than one political jurisdiction.

Putting it all together

The programs described in this chapter function together to improve the quality of Arizona's water resources. The box below illustrates the water quality improvement process and the parties involved using a demonstration stream. Through this process, ADEQ strives to preserve, protect, and enhance water resources in Arizona by generating credible monitoring data, applying comprehensive assessment methods, developing plans for water quality improvement, and encouraging public involvement in water quality projects and planning.

Example Stream - Babbling Brook

- | | |
|-----------------|--|
| Step#1 | Surface Water Monitoring and Standards Program
Establishes water quality standards for Babbling Brook. |
| Step #2 | Field personnel obtain water quality data that is used to assess the biological, chemical, and physical integrity of the stream. |
| Step #3 | Volunteer Monitoring Program
Works with volunteer groups across Arizona to collect data. These data supplement water quality data and information collected by ADEQ and other agencies on Babbling Brook. |
| Step #4 | Watershed Management Unit
Completes state water quality assessment (305b Report) and Babbling Brook is identified as impaired and placed on the 303(d) List of impaired waters for copper and zinc. |
| Step #5 | TMDL Unit
Completes a TMDL study for copper and zinc on Babbling Brook. |
| Step #6 | Watershed Management Unit
Develops a TMDL implementation plan to improve water quality in the stream and identifies an action plan with milestones to be implemented by the stakeholders. |
| Step #7 | Grants and Outreach Unit
The stakeholders within the Babbling Brook watershed apply for a Water Quality Improvement Grant and receive priority because there is a TMDL implementation plan in place. |
| Step #8 | The project(s) is approved and the Grants and Outreach Unit is responsible for managing the project. |
| Step #9 | Volunteer Monitoring Program
Works with project managers or other volunteer groups to collect data. These data help to determine the effectiveness of the management measures that are implemented, as identified in the TMDL implementation plan. |
| Step #10 | Grants and Outreach Unit
The water quality improvement project is completed and the project is closed out. |
| Step #11 | TMDL Unit
The targeted monitoring staff of the TMDL Unit conduct follow-up water quality monitoring. The data indicate that Babbling Brook is meeting water quality standards and the stream is added to the list of "attaining" waters. |

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Appendix A. Acronyms, Abbreviations, Definitions, and Units of Measure

AAC	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
AGFD	Arizona Game and Fish Department
Agricultural Irrigation (Agl)	Surface water is used for the irrigation of crops.
Agricultural Livestock Watering (AgL)	Surface water is used as a supply of water for consumption by livestock.
Active Management Area (AMA)	A ground water <u>quantity</u> management area, established under the Groundwater Management Code, established where ground water overdraft is most severe. There are five AMA's: Phoenix, Pinal, Prescott, Santa Cruz, and Tucson.
Aquatic and Wildlife Coldwater Fishery (A&Wc)	Surface water used by animals, plants, or other organisms (including salmonid fish) for habitation, growth, or propagation, generally occurring above 5000 feet elevation.
Aquatic and Wildlife Effluent Dependent Water (A&Wedw)	Surface water that consists of discharges of treated wastewater that is classified as an effluent-dependent water by ADEQ under R18-11-113 of the Arizona Administrative Code. An effluent-dependent water, without the discharge of treated wastewater, would be an ephemeral water. This surface water is used by animals, plants, or other organisms for habitation, growth, or propagation.
Aquatic and Wildlife Ephemeral (A&We)	Surface water that has a channel that is at all times above the water table, and that flows only in direct response to precipitation. Ephemeral water is used by animals, plants, or other organisms (excluding fish) for habitation, growth, or propagation.
Aquatic and Wildlife Warmwater Fishery (A&Ww)	Surface water used by animals, plants, or other organisms (excluding salmonid fish) for habitation, growth, or propagation, generally occurring at elevations less than 5000 feet.
Aquatic Biotic Tissue	Fish tissue or other aquatic organism tissue; criteria are from US Fish and Wildlife Service published action levels.
BEHI	Bank erosion hazard index.
Biological Communities	Groups of fish, macroinvertebrates, algae, or riparian vegetation occupying a habitat or area.
BLM	United States Bureau of Land Management
BoR	United States Bureau of Reclamation
CAP	The Central Arizona Project is a canal system that brings Colorado River water across Arizona, terminating in Tucson.
CERCLA	Comprehensive Environmental Response Compensation and Liability Act. EPA's Superfund Program.
Core Parametric Coverage	Although all parameters with numeric standards are used for assessments, there needs to be at least three sampling events with these specified parameters to assess a designated use as "attaining." This specified parametric coverage does <u>not</u> need to be available to assess a designated use as "impaired."
Credible Data	Surface water monitoring data that is collected meeting requirements established in the Impaired Water Identification Rule (R18-11-602). These requirements include collecting and analyzing data using a Quality Assurance Plan, Sampling and Analysis Plan, approved methods, approved laboratory, and adequately trained personnel.

Designated Uses	<p>Designated uses are specified for stream segments and lakes in the surface water rules (Arizona Administrative Code R18-11-104). Waterbodies not listed in the rules obtain their designated uses through the "Tributary Rule". Arizona's surface water designated uses include:</p> <p>Aquatic and Wildlife Coldwater Fishery (A&Wc) Warmwater Fishery (A&Ww) Ephemeral Stream (A&We) Effluent Dependent Water (A&Wedw), Domestic Water Source (DWS), Fish Consumption (FC), Full Body Contact (FBC) (i.e., swimming), Partial Body Contact (PBC) (i.e., non-swimming recreation), Agricultural Irrigation (Agl), and Agricultural Livestock Watering (Agl).</p>
Designated Use Support	<p>Attaining – Surface water quality standards are being met based on a minimum of 3 monitoring events that provide seasonal representation and core parametric coverage.</p> <p>Threatened – Surface water quality standards are currently being met, but a trend analysis indicates that the surface water is likely to be impaired before the next assessment.</p> <p>Impaired – Surface water quality standards are not being met based on sufficient number of samples to meet the test of impairment identified in the Impaired Waters Identification Rule (Appendix B).</p> <p>Not attaining – Surface water is not attaining its uses, but a TMDL does not need to be completed because:</p> <ol style="list-style-type: none"> 1) A TMDL has been approved but the surface water is not yet achieving its designated uses, 2) Another action is occurring that so that the surface water is expected to attain its uses before the next assessment, 3) The impairment is due to pollution where a pollutant loading cannot be calculated (e.g., hydromodification), <p>Inconclusive – Monitoring or other assessment information available is insufficient to assess the surface water as "attaining," "threatened," "impaired," or "not attaining."</p> <p>Not assessed – Only one or two water sample or no samples. No information indicating that a narrative standard is being violated.</p>
Domestic Water Source (DWS)	Surface water is used as a potable water supply. Coagulation, sedimentation, filtration, disinfection or other treatments may be necessary to yield a finished water suitable for human consumption.
Effluent Dependent Water	(See Aquatic and Wildlife Effluent Dependent Water)
EMAP	US Environmental Protection Agency's Environmental Monitoring and Assessment Project.
EPA or USEPA	The United States Environmental Protection Agency
Ephemeral Flow	(See Aquatic and Wildlife Ephemeral Water)
Exceed/Exceedance	Monitoring data results were greater than a maximum standard or below a minimum standard.
Fish Consumption (FC)	Surface water is used by humans for harvesting aquatic organisms for consumption. Harvestable aquatic organisms include, but are not limited to, fish, clams, crayfish, and frogs.
Full Body Contact (FBC)	Surface water use causes the human body to come into direct contact with the water to the point of complete submergence (e.g., swimming). The use is such that ingestion of the water is likely to occur and certain sensitive body organs (e.g., eyes, ears, or nose) may be exposed to direct contact with the water.
IBWC	International Boundary and Water Commission, an international commission established to resolve water quality issues along the United States border with Mexico.
Intermittent Flow	Surface water flows continuously only at certain times of the year, as when it receives water from springs or from some surface source such as melting snow (i.e., seasonal).
Macroinvertebrates	Stream bottom dwelling insects and other organisms that inhabit freshwater habitats for at least part of their life cycle and are retained by a mesh screen size greater than 0.2 millimeters.

MCL	Maximum Contaminant Level. Standards for public drinking water systems. (See also SMCL.)
Narrative Water Quality Standards	(R18-11-108) Surface waters will be free from pollutants in amounts or combinations that: <ul style="list-style-type: none"> - Settle to form bottom deposits that impair aquatic life or recreational uses; - Cause an objectionable odor; - Cause an off-taste or odor in drinking water; - Cause an off-flavor in aquatic organisms or waterfowl; - Are "toxic" to humans, animals, plants, or other organisms; - Cause the growth of algae or aquatic plants that impair aquatic life or recreational uses; - Cause or contribute to a violation of an aquifer water quality standard (R18-11-405 through 406); or - Change the color of the surface water from natural background levels.
Naturally Occurring Condition	The condition of a surface water or segment that would have occurred in the absence of pollutant loadings as a result of human activity.
NAWQA	The US Geological Survey's National Water Quality Assessment Program.
Nonpoint Source	These sources of pollutants come from nondiscrete discharges such as atmospheric deposition, contaminated sediment, and land uses that generate polluted runoff like agriculture, urban land development, forestry, construction, and on-site sewage disposal systems. Nonpoint source pollution also encompasses activities that either change the natural flow regime of a stream or wetland or result in habitat disturbance.
NPDES / AZPDES	National Pollutant Discharge Elimination System is a federal point source discharge permit. ADEQ has obtained primacy for this program, which uses the acronym AZPDES in describing this permit.
Partial Body Contact (PBC)	Surface water is used so that the human body comes into direct contact with the water, but normally not at the point of complete submergence (i.e., non-swimming recreation). The use is such that ingestion of the water is not likely to occur, nor will sensitive body organs (e.g., eyes, ears, or nose) normally be exposed to direct contact with the water.
Perennial Flow	Surface water that flows continuously.
Point Source	These sources of pollution are discrete, identifiable sources such as pipes or ditches that are primarily associated with industries and municipal sewage treatment plants. (See nonpoint source.)
Public Water Supply	A water system which conveys water for human consumption to 15 or more service connections or serves an average of at least 25 persons per day (as defined by the federal Safe Drinking Water Act).
QAP	Quality Assurance Plan. This is a written plan detailing how environmental data will be collected, analyzed, assessed for quality, and establishes the data quality objectives that the data must meet.
RCRA	Resource Conservation and Recovery Act established by the federal government to control hazardous wastes.
Reach	A segment of a stream. EPA originally divided Arizona's streams on the USGS hydrology at 1:100,000 scale map into reaches based on hydrological features such as tributaries. ADEQ has further subdivided these reaches based on changes in designated use support and water quality.
Sampling Event	A "sampling event" is one or more samples taken under consistent conditions on one or more consecutive days at a specific location.
SAP	Sampling and Analysis Plan. This is a written site-specific plan to ensure that samples collected and analyzed meet data quality objectives and are representative of surface water conditions at the time of sampling.
SMCL	Secondary Maximum Contaminant Level. A guidance level established by EPA for substances that create only taste or odor problems in drinking water.
SRP	Salt River Project

Surface Water	<p>These are "waters of the United States", which include:</p> <ul style="list-style-type: none"> - All waters which are, have been, or could be used for interstate or foreign commerce; - All interstate waters or wetlands; - All lakes, reservoirs, natural ponds, rivers, streams (including intermittent and ephemeral streams), creeks, washes, draws, mudflats, sandflats, wetlands, backwaters, playas (etc.) which could be used by visitors to our state for recreation, from which fish or shellfish could be taken or sold, or which is used for industrial purposes; or - All impoundments, wetlands, or tributaries of above waters. <p>(Summarized from Arizona Administrative Code R18-11-101)</p>
SVOC	Semi-volatile organic chemical or compound (see also VOC)
Toxic Chemicals	Pollutants or combinations of pollutants which, after discharge and exposure (contact, ingestion, inhalation, or assimilation) to any organism (either directly from the environment or indirectly through the food chain), may cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction), or physical deformations in such organisms or offspring.
TMDL	Total Maximum Daily Load. A TMDL is a written, quantitative plan and analysis to determine the maximum loading on a pollutant basis that a surface water can assimilate and still attain and maintain a specific water quality standard during all conditions. The TMDL allocates the loading capacity of the surface water to point sources and nonpoint sources identified in the watershed, accounting for natural background levels and seasonal variation, with an allocation set aside as a margin of safety.
Tributary Rule	<p>This rule (Arizona Administrative Code R18-11-105, amended in 2002) is used to determine "Designated Uses" for waterbodies not specifically listed in the surface water protection rules. Uses are assigned as follows:</p> <ul style="list-style-type: none"> - Ephemeral waters are assigned the Aquatic and Wildlife ephemeral and Partial Body Contact uses only. - Perennial and intermittent waters are assigned the Aquatic and Wildlife coldwater use if above 5,000 feet, and warmwater if below 5,000 feet. The Fish Consumption and Full Body Contact uses are assigned to all perennial and intermittent waters. - Agricultural and Domestic Water Source uses do not apply to any waters not listed in rule.
Trophic Status	<p>Lakes can be classified by the level of nutrients available for primary biological production. Lakes generally progress through the following trophic phases or states:</p> <p>Oligotrophic – Low algal or plant productivity;</p> <p>Mesotrophic – Medium algal or plant productivity;</p> <p>Eutrophic – High algal or plant productivity; and productivity;</p> <p>Hypereutrophic – Very high algal or plant productivity and light limited. That is, instead of growth being limited by nutrient availability (as it is in other trophic conditions), growth becomes limited by light.</p>
Unique Water	A surface water classified as an outstanding state resource water under Arizona Administrative Code R18-11-112.
USFWS	United States Fish and Wildlife Service
USFS	United States Forest Service
USGS	United States Geological Survey
UST	Underground Storage Tanks Program for eliminating the release of toxic chemicals from storage tanks.
VOC	Volatile organic chemical or compound (e.g., solvents)
Waters of the United States	(See "surface water" definition.)
WTP	Water Treatment Plant for drinking water treatment.
WWTP	Wastewater Treatment Plant
WQARF	Water Quality Assurance Revolving Fund. Arizona's Superfund program for cleanup of contaminated sites.

CHEMICAL ABBREVIATIONS

BTEX	combination of petroleum hydrocarbons including: benzene, toluene, ethylbenzene, xylene
DCA	dichloroethane
DCB	dichlorobenzene
DCE	dichloroethene
MTBE	methyl tertiary butyl ether
PCE	tetrachloroethane
TCE	trichloroethene

UNITS OF MEASUREMENT AND CONVERSIONS

MEASUREMENT USE	UNIT	EQUIVALENT UNITS OR CONVERSION
Bacteria concentration in water	colony forming units (CFU) per 100 milliliter	
Chemical concentrations in water	milligram per liter (mg/L) microgram per liter ($\mu\text{g/L}$)	1 mg/L = 0.001 grams per liter 1 mg/L = parts per million (ppm) 1 $\mu\text{g/L}$ = 0.001 milligram per liter (mg/l) 1 $\mu\text{g/L}$ = 0.000001 grams per liter 1 $\mu\text{g/L}$ = 1 parts per billion (ppb)
Chemical concentrations in animal tissue and sediment	milligram per kilogram (mg/kg) microgram per kilogram ($\mu\text{g/kg}$)	1 mg/kg = 1 parts per million (ppm) 1 mg/kg = 1 microgram per gram ($\mu\text{g/g}$) 1 $\mu\text{g/kg}$ = 1 parts per billion (ppb)
Ground water quantity	acre-feet	1 acre-foot = 325,900 gallons
pH in water	standard unit (SU)	
Radiochemical concentrations in water	picocuries per liter (pCi/L)	
Rate of flow	cubic feet per second (cfs)	1 cfs = 448.83 gallons per minute (gpm) 1 cfs = 646,000 gallons per day (gpd)
Lake area	acres	
Stream length	miles	1 mile = 1.6 kilometers (km)
Watershed size	square miles	1 square mile = 640 acres per square mile
Water turbidity (ability of light to travel through the water)	Nephelometric Turbidity Unit (NTU)	

Appendix B. Arizona's Statute and Rules for Impaired Waters

ARIZONA'S REVISED STATUTES ARTICLE 2.1 TOTAL MAXIMUM DAILY LOADS 49-231 TO 49-238 (effective July 2000)

49-231. Definitions

In this article, unless the context otherwise requires:

1. "Impaired water" means a navigable water for which credible scientific data exists that satisfies the requirements of section 49-232 and that demonstrates that the water should be identified pursuant to 33 United States Code section 1313(d) and the regulations implementing that statute.
2. "Surface water quality standard" means a standard adopted for a navigable water pursuant to sections 49-221 and 49-222 and section 303(c) of the clean water act (33 United States Code section 1313(c)).
3. "TMDL implementation plan" means a written strategy to implement a total maximum daily load that is developed for an impaired water. TMDL implementation plans may rely on any combination of the following components that the department determines will result in achieving and maintaining compliance with applicable surface water quality standards in the most cost-effective and equitable manner:
 - (a) Permit limitations.
 - (b) Best management practices.
 - (c) Education and outreach efforts.
 - (d) Technical assistance.
 - (e) Cooperative agreements, voluntary measures and incentive-based programs.
 - (f) Load reductions resulting from other legally required programs or activities.
 - (g) Land management programs.
 - (h) Pollution prevention planning, waste minimization or pollutant trading agreements.
 - (i) Other measures deemed appropriate by the department.
4. "Total maximum daily load" means an estimation of the total amount of a pollutant from all sources that may be added to a water while still allowing the water to achieve and maintain applicable surface water quality standards. Each total maximum daily load shall include allocations for sources that contribute the pollutant to the water, as required by section 303(d) of the clean water act (33 United States Code section 1313(d)) and regulations implementing that statute to achieve applicable surface water quality standards.

49-232. Lists of impaired waters; data requirements; rules

A. At least once every five years, the department shall prepare a list of impaired waters for the purpose of complying with section 303(d) of the clean water act (33 United States Code section 1313(d)). The department shall provide public notice and allow for comment on a draft list of impaired waters prior to its submission to the United States Environmental Protection Agency. The department shall prepare written responses to comments received on the draft list. The department shall publish the list of impaired waters that it plans to submit initially to the regional administrator and a summary of the responses to comments on the draft list in the Arizona administrative register at least forty-five days before submission of the list to the regional administrator. Publication of the list in the Arizona administrative register is an appealable agency action pursuant to title 41, chapter 6, article 10 that may be appealed by any party that submitted written comments on the draft list. If the department receives a notice of appeal of a listing pursuant to section 41-1092, subsection B within forty-five days of the publication of the list in the Arizona administrative register, the department shall not include the challenged listing in its initial submission to the regional administrator. The department may subsequently submit the challenged listing to the regional administrator if the listing is upheld in the director's final administrative decision pursuant to section 41-1092.08, or if the challenge to the listing is withdrawn prior to a final administrative decision.

B. In determining whether a water is impaired, the department shall consider only reasonably current credible and scientifically defensible data that the department has collected or has received from another source. Results of water sampling or other assessments of water quality, including physical or biological health, shall be considered credible and scientifically defensible data only if the department has determined all of the following:

1. Appropriate quality assurance and quality control procedures were followed and documented in collecting and analyzing the data.
2. The samples or analyses are representative of water quality conditions at the time the data was collected.
3. The data consists of an adequate number of samples based on the nature of the water in question and the parameters being analyzed.
4. The method of sampling and analysis, including analytical, statistical and modeling methods, is generally accepted and validated in the scientific community as appropriate for use in assessing the condition of the water.

C. The department shall adopt by rule the methodology to be used in identifying waters as impaired. The rules shall specify all of the following:

1. Minimum data requirements and quality assurance and quality control requirements that are consistent with subsection B of this section and that must be satisfied in order for the data to serve as the basis for listing and delisting decisions.

2. Appropriate sampling, analytical and scientific techniques that may be used in assessing whether a water is impaired.

3. Any statistical or modeling techniques that the department uses to assess or interpret data.

4. Criteria for including and removing waters from the list of impaired waters, including any implementation procedures developed pursuant to subsection F of this section. The criteria for removing a water from the list of impaired waters shall not be any more stringent than the criteria for adding a water to that list.

D. In assessing whether a water is impaired, the department shall consider the data available in light of the nature of the water in question, including whether the water is an ephemeral water. A water in which pollutant loadings from naturally occurring conditions alone are sufficient to cause a violation of applicable surface water quality standards shall not be listed as impaired.

E. If the department has adopted a numeric surface water quality standard for a pollutant and that standard is not being exceeded in a water, the department shall not list the water as impaired based on a conclusion that the pollutant causes a violation of a narrative or biological standard unless:

1. The department has determined that the numeric standard is insufficient to protect water quality.

2. The department has identified specific reasons that are appropriate for the water in question, that are based on generally accepted scientific principles and that support the department's determination.

F. Before listing a navigable water as impaired based on a violation of a narrative or biological surface water quality standard and after providing an opportunity for public notice and comment, the department shall adopt implementation procedures that specifically identify the objective basis for determining that a violation of the narrative or biological criterion exists. A total maximum daily load designed to achieve compliance with a narrative or biological surface water quality standard shall not be adopted until the implementation procedure for the narrative or biological surface water quality standard has been adopted.

G. On request, the department shall make available to the public data used to support the listing of a water as impaired and may charge a reasonable fee to persons requesting the data.

H. By January 1, 2002, the department shall review the list of waters identified as

impaired as of January 1, 2000 to determine whether the data that supports the listing of those waters complies with this section. If the data that supports a listing does not comply with this section, the listed water shall not be included on future lists submitted to the United States environmental protection agency pursuant to 33 United States Code section 1313(d) unless in the interim data that satisfies the requirements of this section has been collected or received by the department.

I. The department shall add a water to or remove a water from the list using the process described in section 49-232, subsection A outside of the normal listing cycle if it collects or receives credible and scientifically defensible data that satisfies the requirements of this section and that demonstrates that the current quality of the water is such that it should be removed from or added to the list. A listed water may no longer warrant classification as impaired or an unlisted water may be identified as impaired if the applicable surface water quality standards, implementation procedures or designated uses have changed or if there is a change in water quality.

49-233. Priority ranking and schedule

A. Each list developed by the department pursuant to section 49-232 shall contain a priority ranking of navigable waters identified as impaired and for which total maximum daily loads are required pursuant to section 49-234 and a schedule for the development of all required total maximum daily loads.

B. In the first list submitted to the United States environmental protection agency after the effective date of this article, the schedule shall be sufficient to ensure that all required total maximum daily loads will be developed within fifteen years of the date the list is approved by the environmental protection agency. Total maximum daily loads that are required to be developed for navigable waters that are included for the first time on subsequent lists shall be developed within fifteen years of the initial inclusion of the water on the list.

C. As part of the rule making prescribed by section 49-232, subsection C, the department shall identify the factors that it will use to prioritize navigable waters that require development of total maximum daily loads. At a minimum and to the extent relevant data is available, the department shall consider the following factors in prioritizing navigable waters for development of total maximum daily loads:

1. The designated uses of the navigable water.

2. The type and extent of risk from the impairment to human health or aquatic life.

3. The degree of public interest and support, or its lack.

4. The nature of the navigable water, including whether it is an ephemeral,

intermittent or effluent-dependent water.

5. The pollutants causing the impairment.

6. The severity, magnitude and duration of the violation of the applicable surface water quality standard.

7. The seasonal variation caused by natural events such as storms or weather patterns.

8. Existing treatment levels and management practices.

9. The availability of effective and economically feasible treatment techniques, management practices or other pollutant loading reduction measures.

10. The recreational and economic importance of the water.

11. The extent to which the impairment is caused by discharges or activities that have ceased.

12. The extent to which natural sources contribute to the impairment.

13. Whether the water is accorded special protection under federal or state water quality law.

14. Whether action that is taken or that is likely to be taken under other programs, including voluntary programs, is likely to make significant progress toward achieving applicable standards even if a total maximum daily load is not developed.

15. The time expected to be required to achieve compliance with applicable surface water quality standards.

16. The availability of documented, effective analytical tools for developing a total maximum daily load for the water with reasonable accuracy.

17. Department resources and programmatic needs.

49-234. Total maximum daily loads; implementation plans

A. The department shall develop total maximum daily loads for those navigable waters listed as impaired pursuant to this article and for which total maximum daily loads are required to be adopted pursuant to 33 United States Code section 1313(d) and the regulations implementing that statute. The department may estimate total maximum daily loads for navigable waters not listed as impaired pursuant to this article, for the purposes of developing information to satisfy the requirements of 33 United States Code section 1313(d)(3), only after it has developed total maximum daily loads for all navigable waters identified as impaired pursuant to this article or if necessary to support permitting of new point source discharges.

B. In developing total maximum daily loads, the department shall use only statistical and modeling techniques that are properly validated and broadly accepted by the scientific community. The modeling technique may vary based on the type of water and the quantity and quality of available data that meets the quality assurance and quality control requirements of section 49-232. The department may establish the statistical and modeling techniques in rules adopted

pursuant to section 49-232, subsection C.

C. Each total maximum daily load shall:

1. Be based on data and methodologies that comply with section 49-232.

2. Be established at a level that will achieve and maintain compliance with applicable surface water quality standards.

3. Include a reasonable margin of safety that takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality. The margin of safety shall not be used as a substitute for adequate data when developing the total maximum daily load.

4. Account for seasonal variations that may include setting total maximum daily loads that apply on a seasonal basis.

D. For each impaired water, the department shall prepare a draft estimate of the total amount of each pollutant that causes the impairment from all sources and that may be added to the navigable water while still allowing the navigable water to achieve and maintain applicable surface water quality standards. The department shall provide public notice and allow for comment on each draft estimate and shall prepare written responses to comments received on the draft estimates. The department shall publish the determinations of total pollutant loadings that will not result in impairment that it intends to submit initially to the regional administrator, along with a summary of the responses to comments on the estimated loadings, in the Arizona administrative register at least forty-five days before submission of the loadings to the regional administrator. Publication of the loadings in the administrative register is an appealable agency action pursuant to title 41, chapter 6, article 10 that may be appealed by any party that submitted written comments on the estimated loadings. If the department receives a notice of appeal of a loading pursuant to section 41-1092, subsection B within forty-five days of the publication of the loading in the Arizona administrative register, the department shall not submit the challenged loading to the regional administrator until either the challenge to the loading is withdrawn or the director has made a final administrative decision pursuant to section 41-1092.08.

E. After each final loading pursuant to subsection D of this section is adopted and consistent with subsection F of this section, the department shall determine draft allocations among the contributing sources that are sufficient to achieve the total loading established pursuant to subsection D of this section. The department's proposed determination of allocations shall be subject to public notice and comment. The department shall prepare written responses to comments received on the draft allocations. After consideration of public comment received, the department shall publish the allocations and a summary of the responses to comments in the Arizona administrative register. The

publication shall occur at least forty-five days before submission of the allocations to the regional administrator, if such submission is required by the rules implementing 33 United States Code section 1313(d). Publication of the allocations in the Arizona administrative register is an appealable agency action pursuant to title 41, chapter 6, article 10 that may be appealed by any party that submitted written comments on the draft allocations. If the department receives a notice of appeal of an allocation pursuant to section 41-1092, subsection B within forty-five days of the publication of the allocation in the Arizona administrative register, the department shall not take further action on the challenged allocation, or submit it to the regional administrator if such submission is required by the rules implementing 33 United States Code section 1313(d), until either the challenge to the loading is withdrawn or the director has made a final administrative decision pursuant to section 41-1092.08.

F. The department shall make reasonable and equitable allocations among sources when developing total maximum daily loads. At a minimum, the department shall consider the following factors in making allocations:

1. The environmental, economic and technological feasibility of achieving the allocation.
2. The cost and benefit associated with achieving the allocation.
3. Any pollutant loading reductions that are reasonably expected to be achieved as a result of other legally required actions or voluntary measures.

G. For each total maximum daily load, the department shall establish a TMDL implementation plan that explains how the allocations and any reductions in existing pollutant loadings will be achieved. Any reductions in loadings from nonpoint sources shall be achieved voluntarily. The department shall provide for public notice and comment on each TMDL implementation plan. Any sampling or monitoring components of a TMDL implementation plan shall comply with section 49-232.

H. Each TMDL implementation plan shall provide the time frame in which compliance with applicable surface water quality standards is expected to be achieved. The plan may include a phased process with interim targets for load reductions. Longer time frames are appropriate in situations involving multiple dischargers, technical, legal or economic barriers to achieving necessary load reductions, scientific uncertainty regarding data quality or modeling, significant loading from natural sources or significant loading resulting from discharges or activities that have already ceased.

I. For navigable waters that are impaired due in part to historical factors that are difficult to address, including contaminated sediments, the department shall consider those historical factors in determining allocations for existing point

source discharges of the pollutant or pollutants that cause the impairment. In developing total maximum daily loads for those navigable waters, the department shall use a phased approach in which expected long-term loading reductions from the historical sources are considered in establishing short-term allocations for the point sources. While total maximum daily loads and TMDL implementation plans are being completed, any permits issued for the point sources are deemed consistent with this article if the permits require reasonable reductions in the discharges of the pollutants causing the impairment and are not required to include additional reductions if those reductions would not significantly contribute to attainment of surface water quality standards.

J. After a total maximum daily load and a TMDL implementation plan have been adopted for a navigable water, the department shall review the status of the navigable water at least once every five years to determine if compliance with applicable surface water quality standards has been achieved. If compliance with applicable surface water quality standards has not been achieved, the department shall evaluate whether modification of the total maximum daily load or TMDL implementation plan is required.

49-235. Rules

The department shall adopt any rules necessary to implement this article.

49-236. Report

By September 1, 2005, the department shall submit a report to the governor, the speaker of the house of representatives and the president of the senate detailing progress made under this program and shall provide a copy to the secretary of state and the department of library, archives and public records. At a minimum, the report shall:

1. Evaluate the effectiveness of the total maximum daily load program and identify any recommended statutory changes to make the program more efficient, effective and equitable.
2. Assess the extent to which water quality problems that cannot be effectively addressed under the total maximum daily load program may be addressed under other federal or state laws.
3. Identify the number of appeals of department decisions under this article sought pursuant to title 41, chapter 6, article 10 and the disposition of those appeals, and assess the impact of those appeals on the department's ability to administer the program effectively.

49-237. Impact of successful judicial appeal of Arizona Department of Environmental Quality decision

If a person appeals to court and succeeds in overturning or modifying a final administrative decision of the director pursuant to this article in an appeal

initiated pursuant to title 41, chapter 6, article 10, within thirty days of the court's decision the department shall take the steps necessary to implement the court's decision, unless the director's decision that is overturned or modified was submitted to and approved by the regional administrator, in which case within thirty days of the court's decision the department shall request that the regional administrator modify the approval to reflect the court's decision.

49-238. Program termination

The program established by this article ends on July 1, 2010 pursuant to section 41-3102.

**TITLE 18. ENVIRONMENTAL QUALITY
CHAPTER 11. DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER QUALITY STANDARDS**

ARTICLE 6. IMPAIRED WATER IDENTIFICATION

R18-11-601. Definitions

In addition to the definitions established in A.R.S. §§ 49-201 and 49-231, and A.A.C. R18-11-101, the following terms apply to this Article:

1. "303(d) List" means the list of surface waters or segments required under section 303(d) of the Clean Water Act and A.R.S. Title 49, Chapter 2, Article 2.1, for which TMDLs are developed and submitted to EPA for approval.
2. "Attaining" means there is sufficient, credible, and scientifically defensible data to assess a surface water or segment and the surface water or segment does not meet the definition of impaired or not attaining.
3. "AZPDES" means the Arizona Pollutant Elimination Discharge System.
4. "Credible and scientifically defensible data" means data submitted, collected, or analyzed using:
 - a. Quality assurance and quality control procedures under A.A.C. R18-11-602;
 - b. Samples or analyses representative of water quality conditions at the time the data were collected;
 - c. Data consisting of an adequate number of samples based on the nature of the water in question and the parameters being analyzed; and
 - d. Methods of sampling and analysis, including analytical, statistical, and modeling methods that are generally accepted and validated by the scientific community as appropriate for use in assessing the condition of the water.
5. "Designated use" means those uses specified in 18 A.A.C. 11, Article 1 for each surface water or segment whether or not they are attaining.
6. "EPA" means the U.S. Environmental Protection Agency.
7. "Impaired water" means a Navigable water for which credible scientific data exists that satisfies the requirements of § 49-232 and that demonstrates that the water should be identified pursuant to 33 United States Code § 1313(d) and the regulations implementing that statute. A.R.S. § 49-231(1).
8. "Laboratory detection limit" means a "Method Reporting Limit" (MRL) or "Reporting Limit" (RL). These analogous terms describe the laboratory reported value, which is the lowest concentration level included on the calibration curve from the analysis of a pollutant that can be quantified in terms of precision and accuracy.
9. "Monitoring entity" means the Department or any person who collects physical, chemical, or biological data used for an impaired water identification or

a TMDL decision.

10. "Naturally occurring condition" means the condition of a surface water or segment that would have occurred in the absence of pollutant loadings as a result of human activity.

11. "Not attaining" means a surface water is assessed as impaired, but is not placed on the 303(d) List because:

- a. A TMDL is prepared and implemented for the surface water;
- b. An action, which meets the requirements of R18-11-604(D)(2)(h), is occurring and is expected to bring the surface water to attaining before the next 303(d) List submission; or
- c. The impairment of the surface water is due to pollution but not a pollutant, for which a TMDL load allocation cannot be developed.

12. "NPDES" means National Pollutant Discharge Elimination System.

13. "Planning List" means a list of surface waters and segments that the Department will review and evaluate to determine if the surface water or segment is impaired and whether a TMDL is necessary.

14. "Pollutant" means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. 33 U.S.C. 1362(6). Characteristics of water, such as dissolved oxygen, pH, temperature, turbidity, and suspended sediment are considered pollutants if they result or may result in the non-attainment of a water quality standard.

15. "Pollution" means "the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water. 33 U.S.C. 1362(19).

16. "QAP" means a quality assurance plan detailing how environmental data operations are planned, implemented, and assessed for quality during the duration of a project.

17. "Sampling event" means one or more samples taken under consistent conditions on one or more days at a distinct station or location.

18. "SAP" means a site specific sampling and analysis plan that describes the specifics of sample collection to ensure that data quality objectives are met and that samples collected and analyzed are representative of surface water conditions at the time of sampling.

19. "Spatially independent sample" means a sample that is collected at a distinct station or location. The sample is independent if the sample was collected:

- a. More than 200 meters apart from other samples, or
- b. Less than 200 meters apart, and collected to characterize the effect of an intervening tributary, outfall or other pollution source, or significant hydrographic or hydrologic change.

20. "Temporally independent sample" means a sample that is collected at the same station or location more than seven days apart from other samples.

21. "Threatened" means that a surface water or segment is currently attaining its designated use, however, trend analysis, based on credible and scientifically defensible data, indicates that the surface water or segment is likely to be impaired before the next listing cycle.

22. "TMDL" means total maximum daily load.

23. "TMDL decision" means a decision by the Department to:

- a. Prioritize an impaired water for TMDL development,
- b. Develop a TMDL for an impaired water, or
- c. Develop a TMDL implementation plan.

24. "Total maximum daily load" means an estimation of the total amount of a pollutant from all sources that may be added to a water while still allowing the water to achieve and maintain applicable surface water quality standards. Each total maximum daily load shall include allocations for sources that contribute the pollutant to the water, as required by section 303(d) of the clean water act (33 United States Code section 1313(d)) and regulations implementing that statute to achieve applicable surface water quality standards. A.R.S. § 49-231(4).

25. "Water quality standard" means a standard composed of designated uses (classification of waters), the numerical and narrative criteria applied to the specific water uses or classification, the antidegradation policy, and moderating provisions, for example, mixing zones, site-specific alternative criteria, and exemptions, in A.A.C. Title 18, Chapter 11, Article 1.

26. "WQARF" means the water quality assurance revolving fund established under A.R.S. § 49-282.

R18-11-602. Credible Data

A. Data are credible and relevant to an impaired water identification or a TMDL decision when:

1. Quality Assurance Plan. A monitoring entity, which contribute data for an impaired water identification or a TMDL decision, provides the Department with a QAP that contains, at a minimum, the elements listed in subsections (A)(1)(a) through (A)(1)(f). The Department may accept a QAP containing less than the required elements if the Department determines that an element is not relevant to the sampling activity and that its omission will not impact the quality of the results based upon the type of pollutants to be sampled, the type of surface water, and the purpose of the sampling.

- a. An approval page that includes the date of approval and the signatures of the approving officials, including the project manager and project quality assurance manager;
- b. A project organization outline that identifies all key personnel, organizations, and laboratories involved in monitoring, including the specific roles and responsibilities of key personnel in carrying out the

procedures identified in the QAP and SAP, if applicable;

c. Sampling design and monitoring data quality objectives or a SAP that meets the requirements of subsection (A)(2) to ensure that:

- i. Samples are spatially and temporally representative of the surface water,
- ii. Samples are representative of water quality conditions at the time of sampling, and
- iii. The monitoring is reproducible;

d. The following field sampling information to assure that samples meet data quality objectives:

- i. Sampling and field protocols for each parameter or parametric group, including the sampling methods, equipment and containers, sample preservation, holding times, and any analysis proposed for completion in the field or outside of a laboratory;
- ii. Field and laboratory methods approved under subsection(A)(5);
- iii. Handling procedures to identify samples and custody protocols used when samples are brought from the field to the laboratory for analysis;
- iv. Quality control protocols that describe the number and type of field quality control samples for the project that includes, if appropriate for the type of sampling being conducted, field blanks, travel blanks, equipment blanks, method blanks, split samples, and duplicate samples;
- v. Procedures for testing, inspecting, and maintaining field equipment;
- vi. Field instrument calibration procedures that describe how and when field sampling and analytical instruments will be calibrated;
- vii. Field notes and records that describe the conditions that require documentation in the field, such as weather, stream flow, transect information, distance from water edge, water and sample depth, equipment calibration measurements, field observations of watershed activities, and bank conditions. Indicate the procedures implemented for maintaining field notes and records and the process used for attaching pertinent information to monitoring results to assist in data interpretation;
- viii. Minimum training and any specialized training necessary to do the monitoring, that includes the proper use and calibration of field equipment used to collect data, sampling protocols, quality assurance/quality control procedures, and

how training will be achieved;

e. Laboratory analysis methods and quality assurance/quality control procedures that assure that samples meet data quality objectives, including:

- i. Analytical methods and equipment necessary for analysis of each parameter, including identification of approved laboratory methods described in subsection (A)(5), and laboratory detection limits for each parameter;
- ii. The name of the designated laboratory, its license number, if licensed by the Arizona Department of Health Services, and the name of a laboratory contact person to assist the Department with quality assurance questions;
- iii. Quality controls that describe the number and type of laboratory quality control samples for the project, including, if appropriate for the type of sampling being conducted, field blanks, travel blanks, equipment blanks, method blanks, split samples, and duplicate samples;
- iv. Procedures for testing, inspecting, and maintaining laboratory equipment and facilities;
- v. A schedule for calibrating laboratory instruments, a description of calibration methods, and a description of how calibration records are maintained; and
- vi. Sample equipment decontamination procedures that outline specific methods for sample collection and preparation of equipment, identify the frequency of decontamination, and describe the procedures used to verify decontamination;

f. Data review, management, and use that includes the following:

- i. A description of the data handling process from field to laboratory, from laboratory to data review and validation, and from validation to data storage and use. Include the role and responsibility of each person for each step of the process, type of database or other storage used, and how laboratory and field data qualifiers are related to the laboratory result;
- ii. Reports that describe the intended frequency, content, and distribution of final analysis reports and project status reports;
- iii. Data review, validation, and verification that describes the procedure used to validate and verify data, the procedures used if errors are detected, and how data are accepted, rejected, or qualified; and
- iv. Reconciliation with data quality objectives that describes the process used to determine whether the data collected meets the project objectives, which may include discarding data, setting limits on data use, or revising data quality objectives.

2. Sampling and analysis plan.

a. A monitoring entity shall develop a SAP that contains, at a minimum, the following elements:

- i. The experimental design of the project, the project goals and objectives, and evaluation criteria for data results;
- ii. The background or historical perspective of the project;
- iii. Identification of target conditions, including a discussion of whether any weather, seasonal variations, stream flow, lake level, or site access may affect the project and the consideration of these factors;
- iv. The data quality objectives for measurement of data that describe in quantitative and qualitative terms how the data meet the project objectives of precision, accuracy, completeness, comparability, and representativeness;
- v. The types of samples scheduled for collection;
- vi. The sampling frequency;
- vii. The sampling periods;
- viii. The sampling locations and rationale for the site selection, how site locations are benchmarked, including scaled maps indicating approximate location of sites; and
- ix. A list of the field equipment, including tolerance range and any other manufacturer's specifications relating to accuracy and precision.

b. The Department may accept a SAP containing less than the required elements if the Department determines that an element is not relevant to the sampling activity and that its omission will not impact the quality of the results based upon the type of pollutants to be samples, the type of surface water, and the purpose of the sampling.

3. [Options] The monitoring entity may include any of the following in the QAP or SAP:

- a. The name, title, and role of each person and organization involved in the project, identifying specific roles and responsibilities for carrying out the procedures identified in the QAP and SAP;
- b. A distribution list of each individual and organization receiving a copy of the approved QAP and SAP;
- c. A table of contents;
- d. A health and safety plan;
- e. The inspection and acceptance requirements for supplies;
- f. The data acquisition that describes types of data not obtained through this monitoring activity, but used in the project;
- g. The audits and response actions that describe how field, laboratory, and data management activities and sampling personnel are evaluated to ensure data quality, including a description of how the project will

correct any problems identified during these assessments; and

h. The waste disposal methods that identify wastes generated in sampling and methods for disposal of those wastes.

4. Exceptions. The Department may determine that the following data are also credible and relevant to an impaired water identification or TMDL decision when data were collected, provided the conditions in subsections (A)(5), (A)(6), and (B) are met, and where the data were collected in the surface water or segment being evaluated for impairment:

a. The data were collected before July 12, 2002 and the Department determines that the data yield results of comparable reliability to the data collected under subsections (A)(1) and (A)(2);

b. The data were collected after July 12, 2002 as part of an ongoing monitoring effort by a governmental agency and the Department determines that the data yield results of comparable reliability to the data collected under subsections (A)(1) and (A)(2); or

c. The instream water quality data were or are collected under the terms of a NPDES or AZPDES permit or a compliance order issued by the Department or EPA, a consent decree signed by the Department or EPA, or a sampling program approved by the Department or EPA under WQARF or CERCLA, and the Department determines that the data yield results of comparable reliability to data collected under subsections (A)(1) and (A)(2).

5. Data collection, preservation, and analytical procedures. The monitoring entity shall collect, preserve, and analyze data using methods of sample collection, preservation, and analysis established under A.A.C. R9-14-610.

6. Laboratory. The monitoring entity shall ensure that chemical and toxicological samples are analyzed in a state-licensed laboratory, a laboratory exempted by the Arizona Department of Health Services for specific analyses, or a federal or academic laboratory that can demonstrate proper quality assurance/quality control procedures substantially equal to those required by the Arizona Department of Health Services, and shall ensure that the laboratory uses approved methods identified in A.A.C. R9-14-610.

B. Documentation for data submission. The monitoring entity shall provide the Department with the following information either before or with data submission:

1. A copy of the QAP or SAP, or both, revisions to a previously submitted QAP or SAP, and any other information necessary for the Department to evaluate the data under subsection (A)(4);
2. The applicable dates of the QAP and SAP, including any revisions;

3. Written assurance that the methods and procedures specified in the QAP and SAP were followed;
4. The name of the laboratory used for sample analyses and its certification number, if the laboratory is licensed by the Arizona Department of Health Services;
5. The quality assurance/quality control documentation, including the analytical methods used by the laboratory, method number, detection limits, and any blank, duplicate, and spike sample information necessary to properly interpret the data, if different from that stated in the QAP or SAP;
6. The data reporting unit of measure;
7. Any field notes, laboratory comments, or laboratory notations concerning a deviation from standard procedures, quality control, or quality assurance that affects data reliability, data interpretation, or data validity; and
8. Any other information, such as complete field notes, photographs, climate, or other information related to flow, field conditions, or documented sources of pollutants in the watershed, if requested by the Department for interpreting or validating data.

- C. Record keeping. The monitoring entity shall maintain all records, including sample results, for the duration of the listing cycle. If a surface water or segment is added to the Planning List or to the 303(d) List, the Department shall coordinate with the monitoring entity to ensure that records are kept for the duration of the listing.

R18-11-603. General Data Interpretation Requirements

- A. The Department shall use the following data conventions to interpret data for impaired water identifications and TMDL decisions:
1. Data reported below laboratory detection limits.
 - a. When the analytical result is reported as <X, where X is the laboratory detection limit for the analyte and the laboratory detection limit is less than or equal to the surface water quality standard, consider the result as meeting the water quality standard:
 - i. Use these statistically derived values in trend analysis, descriptive statistics or modeling if there is sufficient data to support the statistical estimation of values reported as less than the laboratory detection limit; or
 - ii. Use one-half of the value of the laboratory detection limit in trend analysis, descriptive statistics, or modeling, if there is insufficient data to support the statistical estimation of values reported as less than the laboratory detection limit.

- b. When the sample value is less than or equal to the laboratory detection limit but the laboratory detection limit is greater than the surface water quality standard, shall not use the result for impaired water identifications or TMDL decisions;
2. Identify the field equipment specifications used for each listing cycle or TMDL developed. A field sample measurement within the manufacturer's specification for accuracy meets surface water quality standards;
3. Resolve a data conflict by considering the factors identified under the weight-of-evidence determination in R18-11-605(B);
4. When multiple samples from a surface water or segment are not spatially or temporally independent, or when lake samples are from multiple depths, use the following resultant value to represent the specific dataset:
 - a. The appropriate measure of central tendency for the dataset for:
 - i. A pollutant listed in the surface water quality standards 18 A.A.C. 11, Article 1, Appendix A, Table 1, except for nitrate or nitrate/nitrite;
 - ii. A chronic water quality standard for a pollutant listed in 18 A.A.C. 11, Article 1, Appendix A, Table 2;
 - iii. A surface water quality standard for a pollutant that is expressed as an annual or geometric mean;
 - iv. The surface water quality standard for temperature or the single sample maximum water quality standard for suspended sediment concentration, nitrogen, and phosphorus in R18-11-109;
 - v. The surface water quality standard for radiochemicals in R18-11-109(G); or
 - vi. Except for chromium, all single sample maximum water quality standards in R18-11-112.
 - b. The maximum value of the dataset for:
 - i. The acute water quality standard for a pollutant listed in 18 A.A.C. 11, Article 1, Appendix A, Table 2 and acute water quality standard in R18-11-112;
 - ii. The surface water quality standard for nitrate or nitrate/nitrite in 18 A.A.C. 11, Article 1, Appendix A, Table 1;
 - iii. The single sample maximum water quality standard for bacteria in subsections R18-11-109(A); or
 - iv. The 90th percentile water quality standard for nitrogen and phosphorus in R18-11-109(F) and R18-11-112.
 - c. The worst case measurement of the dataset for:
 - i. Surface water quality standard for dissolved oxygen under R18-11-109(E). For purposes of this subsection, worst case

measurement means the minimum value for dissolved oxygen;
ii. Surface water quality standard for pH under R18-11-109(B). For purposes of this subsection, "worst case measurement" means both the minimum and maximum value for pH.

B. The Department shall not use the following data for placing a surface water or segment on the Planning List, the 303(d) List, or in making a TMDL decision.

1. Any measurement outside the range of possible physical or chemical measurements for the pollutant or measurement equipment,
2. Uncorrected data transcription errors or laboratory errors, and
3. An outlier identified through statistical procedures, where further evaluation determines that the outlier represents a valid measure of water quality but should be excluded from the dataset.

C. The Department may employ fundamental statistical tests if appropriate for the collected data and type of surface water when evaluating a surface water or segment for impairment or in making a TMDL decision. The statistical tests include descriptive statistics, frequency distribution, analysis of variance, correlation analysis, regression analysis, significance testing, and time series analysis.

D. The Department may employ modeling when evaluating a surface water or segment for impairment or in making a TMDL decision, if the method is appropriate for the type of waterbody and the quantity and quality of available data meet the requirements of R18-11-602. Modeling methods include:

- a. Better Assessment Science Integrating Source and Nonpoint Sources (BASINS),
- b. Fundamental statistics, including regression analysis,
- c. Hydrologic Simulation Program-Fortran (HSPF),
- d. Spreadsheet modeling, and
- e. Hydrologic Engineering Center (HEC) programs developed by the Army Corps of Engineers.

R18-11-604. Types of Surface Waters Placed on the Planning List and 303(d) List

A. The Department shall evaluate, at least every five years, Arizona's surface waters by considering all readily available data.

1. The Department shall place a surface water or segment on:
 - a. The Planning List if it meets any of the criteria described in subsection (D), or
 - b. The 303(d) List if it meets the criteria for listing described in

subsection (E).

2. The Department shall remove a surface water or segment from the Planning List based on the requirements in R18-11-605(E)(1) or from the 303(d) List, based on the requirements in R18-11-605(E)(2).

3. The Department may move surface waters or segments between the Planning List and the 303(d) List based on the criteria established in R18-11-604 and R18-11-605.

B. When placing a surface water or segment on the Planning List or the 303(d) List, the Department shall list the stream reach, derived from EPA's Reach File System or *National Hydrography Dataset*, or the entire lake, unless the data indicate that only a segment of the stream reach or lake is impaired or not attaining its designated use, in which case, the Department shall describe only that segment for listing.

C. Exceptions. The Department shall not place a surface water or segment on either the Planning List or the 303(d) List if the non-attainment of a surface water quality standard is due to one of the following:

1. Pollutant loadings from naturally occurring conditions alone are sufficient to cause a violation of applicable water quality standards;
2. The data were collected within a mixing zone or under a variance or nutrient waiver established in a NPDES or AZPDES permit for the specific parameter and the result does not exceed the alternate discharge limitation established in the permit. The Department may use data collected within these areas for modeling or allocating loads in a TMDL decision; or
3. An activity exempted under R18-11-117, R18-11-118, or a condition exempted under R18-11-119.

D. Planning List.

1. The Department shall:

- a. Use the Planning List to prioritize surface waters for monitoring and evaluation as part of the Department's watershed management approach;
 - b. Provide the Planning List to EPA; and
 - c. Evaluate each surface water and segment on the Planning List for impairment based on the criteria in R18-11-605(D) to determine the source of the impairment.
2. The Department shall place a surface water or segment on the Planning List based the criteria in R18-11-605(C). The Department may also include a surface water or segment on the Planning List when:
- a. A TMDL is completed for the pollutant and approved by EPA;
 - b. The surface water or segment is on the 1998 303(d) List but the

dataset used for the listing:

- i. Does not meet the credible data requirements of R18-11-602, or
 - ii. Contains insufficient samples to meet the data requirements under R18-11-605(D);
- c. Some monitoring data exist but there are insufficient data to determine whether the surface water or segment is impaired or not attaining, including:
- i. A numeric surface water quality standard is exceeded, but there are not enough samples or sampling events to fulfill the requirements of R18-11-605(D);
 - ii. Evidence exists of a narrative standard violation, but the amount of evidence is insufficient, based on narrative implementation procedures and the requirements of R18-11-605(D)(3);
 - iii. Existing monitoring data do not meet credible data requirements in R18-11-602; or
 - iv. A numeric surface water quality standard is exceeded, but there are not enough sample results above the laboratory detection limit to support statistical analysis as established in R18-11-603(A)(1).
- d. The surface water or segment no longer meets the criteria for impairment based on a change in the applicable surface water quality standard or a designated use approved by EPA under section 303(c)(1) of the Clean Water Act, but insufficient current or original monitoring data exist to determine whether the surface water or segment will meet current surface water quality standards;
- e. Trend analysis using credible and scientifically defensible data indicate that surface water quality standards may be exceeded by the next assessment cycle;
- f. The exceedance of surface water quality standards is due to pollution, but not a pollutant;
- g. Existing data were analyzed using methods with laboratory detection limits above the numeric surface water quality standard but analytical methods with lower laboratory detection limits are available;
- h. The surface water or segment is expected to attain its designated use by the next assessment as a result of existing or proposed technology-based effluent limitations or other pollution control requirements under local, state, or federal authority. The appropriate entity shall provide the Department with the following documentation to support placement on the Planning List:
- i. Verification that discharge controls are required and enforceable;

- ii. Controls are specific to the surface water or segment, and pollutant of concern;
- iii. Controls are in place or scheduled for implementation; and
- iv. There are assurances that the controls are sufficient to bring about attainment of water quality standards by the next 303(d) List submission; or

- i. The surface water or segment is threatened due to a pollutant and, at the time the Department submits a final 303(d) List to EPA, there are no federal regulations implementing section 303(d) of the Clean Water Act that require threatened waters be included on the list.

E. 303(d) List. The Department shall:

1. Place a surface water or segment on the 303(d) List if the Department determines:
 - a. Based on R18-11-605(D), that the surface water or segment is impaired due to a pollutant and that a TMDL decision is necessary; or
 - b. That the surface water or segment is threatened due to a pollutant and, at the time the Department submits a final 303(d) List to EPA, there are federal regulations implementing section 303(d) of the Clean Water Act that require threatened waters be included on the list.
2. Provide public notice of the 303(d) List according to the requirements of A.R.S. § 49-232 and submit the 303(d) List according to section 303(d) of the Clean Water Act.

R18-11-605. Evaluating A Surface Water or Segment For Listing and Delisting

A. The Department shall compile and evaluate all reasonably current, credible, and scientifically defensible data to determine whether a surface water or segment is impaired or not attaining.

B. Weight-of-evidence approach.

1. The Department shall consider the following concepts when evaluating data:
 - a. Data or information collected during critical conditions may be considered separately from the complete dataset, when the data show that the surface water or segment is impaired or not attaining its designated use during those critical conditions, but attaining its uses during other periods. Critical conditions may include stream flow, seasonal periods, weather conditions, or anthropogenic activities;
 - b. Whether the data indicate that the impairment is due to persistent, seasonal, or recurring conditions. If the data do not represent persistent, recurring, or seasonal conditions, the Department may place the surface water or segment on the Planning List;

c. Higher quality data over lower quality data when making a listing decision. Data quality is established by the reliability, precision, accuracy, and representativeness of the data, based on factors identified in R18-11-602(A) and (B), including monitoring methods, analytical methods, quality control procedures, and the documented field and laboratory quality control information submitted with the data. The Department shall consider the following factors when determining higher quality data:

- i. The age of the measurements. Newer measurements are weighted heavier than older measurements, unless the older measurements are more representative of critical flow conditions;
- ii. Whether the data provide a direct measure of an impact on a designated use. Direct measurements are weighted heavier than measurements of an indicator or surrogate parameter; or
- iii. The amount or frequency of the measurements. More frequent data collection are weighted heavier than nominal datasets.

2. The Department shall evaluate the following factors to determine if the water quality evidence supports a finding that the surface water or segment is impaired or not attaining:

- a. An exceedance of a numeric surface water quality standard based on the criteria in subsections (C)(1), (C)(2), (D)(1), and (D)(2);
- b. An exceedance of a narrative surface water quality standard based on the criteria in subsections (C)(3) and (D)(3);

c. Additional information that determines whether a water quality standard is exceeded due to a pollutant, suspected pollutant, or naturally occurring condition:

- i. Soil type, geology, hydrology, flow regime, biological community, geomorphology, climate, natural process, and anthropogenic influence in the watershed;
- ii. The characteristics of the pollutant, such as its solubility in water, bioaccumulation potential, sediment sorption potential, or degradation characteristics, to assist in determining which data more accurately indicate the pollutant's presence and potential for causing impairment; and
- iii. Available evidence of direct or toxic impacts on aquatic life, wildlife, or human health, such as fish kills and beach closures, where there is sufficient evidence that these impacts occurred due to water quality conditions in the surface water.

d. Other available water quality information, such as NPDES or AZPDES water quality discharge data, as applicable.

e. If the Department determines that a surface water or segment does

not merit listing under numeric water quality standards based on criteria in subsections (C)(1), (C)(2), (D)(1), or (D)(2) for a pollutant, but there is evidence of a narrative standard exceedance in that surface water or segment under subsection (D)(3) as a result of the presence of the same pollutant, the Department shall list the surface water or segment as impaired only when the evidence indicates that the numeric water quality standard is insufficient to protect the designated use of the surface water or segment and the Department justifies the listing based on any of the following:

- i. The narrative standard data provide a more direct indication of impairment as supported by professionally prepared and peer-reviewed publications;
- ii. Sufficient evidence of impairment exists due to synergistic effects of pollutant combinations or site-specific environmental factors; or
- iii. The pollutant is bioaccumulative, relatively insoluble in water, or has other characteristics that indicate it is occurring in the specific surface water or segment at levels below the laboratory detection limits, but at levels sufficient to result in an impairment.

3. The Department may consider a single line of water quality evidence when the evidence is sufficient to demonstrate that the surface water or segment is impaired or not attaining.

C. Planning List.

1. When evaluating a surface water or segment for placement on the Planning List.

a. Consider at least ten spatially or temporally independent samples collected over three or more temporally independent sampling events; and

b. Determine numeric water quality standards exceedances. The Department shall:

- i. Place a surface water or segment on the Planning List following subsection (B), if the number of exceedances of a surface water quality standard is greater than or equal to the number listed in Table 1, which provides the number of exceedances that indicate a minimum of a 10 percent exceedance frequency with a minimum of a 80 percent confidence level using a binomial distribution for a given sample size; or
- ii. For sample datasets exceeding those shown in Table 1, calculate the number of exceedances using the following

equation: $(X \geq x | n, p)$ where n = number of samples; p = exceedance probability of 0.1; x = smallest number of exceedances required for listing with “ n ” samples; and confidence level ≥ 80 percent.

2. When there are less than ten samples, the Department shall place a surface water or segment on the Planning List following subsection (B), if three or more temporally independent samples exceed the following surface water quality standards:

- a. The surface water quality standard for a pollutant listed in 18 A.A.C. 11, Article 1, Appendix A, Table 1, except for nitrate or nitrate/nitrite;
- b. The surface water quality standard for temperature or the single sample maximum water quality standard for suspended sediment concentration, nitrogen, and phosphorus in R18-11-109;
- c. The surface water quality standard for radiochemicals in R18-11-109(G);
- d. The surface water quality standard for dissolved oxygen under R18-11-109(E);
- e. The surface water quality standard for pH under R18-11-109(B); or
- f. The following surface water quality standards in R18-11-112:
 - i. Single sample maximum standards for nitrogen and phosphorus,
 - ii. All metals except chromium, or
 - iii. Turbidity.

3. The Department shall place a surface water or segment on the Planning List if information in subsections (B)(2)(c), (B)(2)(d), and (B)(2)(e) indicates that a narrative water quality standard violation exists, but no narrative implementation procedure required under A.R.S. § 49-232(F) exists to support use of the information for listing.

D. 303(d) List.

1. When evaluating a surface water or segment for placement on the 303(d) List.

a. Consider at least 20 spatially or temporally independent samples collected over three or more temporally independent sampling events; and

b. Determine numeric water quality standards exceedances. The Department shall:

- i. Place a surface water or segment on the 303(d) List, following subsection (B), if the number of exceedances of a surface water quality standard is greater than or equal to the number listed in Table 2, which provides the number of exceedances that indicate a minimum of a 10 percent exceedance frequency with a minimum of a 90 percent

confidence level using a binomial distribution, for a given sample size; or

ii. For sample datasets exceeding those shown in Table 2, calculate the number of exceedances using the following equation: $(X \geq x | n, p)$ where n = number of samples; p = exceedance probability of 0.1; x = smallest number of exceedances required for listing with “ n ” samples; and confidence level ≥ 90 percent.

2. The Department shall place a surface water or segment on the 303(d) List, following subsection (B) without the required number of samples or numeric water quality standard exceedances under subsection (D)(1), if either the following conditions occur:

a. More than one temporally independent sample in any consecutive three-year period exceeds the surface water quality standard in:

- i. The acute water quality standard for a pollutant listed in 18 A.A.C. 11, Article 1, Appendix A, Table 2 and the acute water quality standards in R18-11-112;
- ii. The surface water quality standard for nitrate or nitrate/nitrite in 18 A.A.C. 11, Article 1, Appendix A, Table 1; or
- iii. The single sample maximum water quality standard for bacteria in subsections R18-11-109(A).

b. More than one exceedance of an annual mean, 90th percentile, aquatic and wildlife chronic water quality standard, or a bacteria 30-day geometric mean water quality standard occurs, as specified in R18-11-109, R18-11-110, R18-11-112, or 18 A.A.C. 11, Article 1, Appendix A, Table 2.

3. Narrative water quality standards exceedances. The Department shall place a surface water or segment on the Planning List if the listing requirements are met under A.R.S. § 49-232(F).

E. Removing a surface water, segment, or pollutant from the Planning List or the 303(d) List.

1. Planning List. The Department shall remove a surface water, segment, or pollutant from the Planning List when:

a. Monitoring activities indicate that:

- i. There is sufficient credible data to determine that the surface water or segment is impaired under subsection (D), in which case the Department shall place the surface water or segment on the 303(d) List. This includes surface waters with an EPA approved TMDL when the Department determines that the TMDL strategy is insufficient for the surface water or segment to attain water quality standards; or

- ii. There is sufficient credible data to determine that the surface water or segment is attaining all designated uses and standards.
- b. All pollutants for the surface water or segment are delisted.
- 2. 303(d) List. The Department shall:
 - a. Remove a pollutant from a surface water or segment from the 303(d) List based on one or more of the following criteria:
 - i. The Department developed, and EPA approved, a TMDL for the pollutant;
 - ii. The data used for previously listing the surface water or segment under R18-11-605(D) is superseded by more recent credible and scientifically defensible data meeting the requirements of R18-11-602, showing that the surface water or segment meets the applicable numeric or narrative surface water quality standard. When evaluating data to remove a pollutant from the 303(d) List, the monitoring entity shall collect the more recent data under similar hydrologic or climatic conditions as occurred when the samples were taken that indicated impairment, if those conditions still exist;
 - iii. The surface water or segment no longer meets the criteria for impairment based on a change in the applicable surface water quality standard or a designated use approved by EPA under section 303(c)(1) of the Clean Water Act;
 - iv. The surface water or segment no longer meets the criteria for impairment for the specific narrative water quality standard based on a change in narrative water quality standard implementation procedures;
 - v. A re-evaluation of the data indicate that the surface water or segment does not meet the criteria for impairment because of a deficiency in the original analysis; or
 - vi. Pollutant loadings from naturally occurring conditions alone are sufficient to cause a violation of applicable water quality standards;
 - b. Remove a surface water, segment, or pollutant from the 303(d) List, based on criteria that are no more stringent than the listing criteria under subsection (D);
 - c. Remove a surface water or segment from the 303(d) List if all pollutants for the surface water or segment are removed from the list;
 - d. Remove a surface water, segment, or pollutant, from the 303(d) List and place it on the Planning List, if:
 - i. The surface water, segment or pollutant was on the 1998 303(d) List and the dataset used in the original listing does not meet the credible data requirements under R18-11-602, or

- contains insufficient samples to meet the data requirements under subsection (D); or
- ii. The monitoring data indicate that the impairment is due to pollution, but not a pollutant.

R18-11-606. TMDL Priority Criteria for 303(d) Listed Surface Waters or Segments

A. In addition to the factors specified in A.R.S. § 49-233(C), the Department shall consider the following when prioritizing an impaired water for development of TMDLs:

- 1. A change in a water quality standard;
- 2. The date the surface water or segment was added to the 303(d) List;
- 3. The presence in a surface water or segment of species listed as threatened or endangered under section 4 of the Endangered Species Act;
- 4. The complexity of the TMDL;
- 5. State, federal, and tribal policies and priorities; and
- 6. The efficiencies of coordinating TMDL development with the Department's surface water monitoring program, the watershed monitoring rotation, or with remedial programs.

- B. The Department shall prioritize an impaired surface water or segment for TMDL development based on the factors specified in A.R.S. § 49-233(C) and subsection (A) as follows:
 - 1. Consider an impaired surface water or segment a high priority if:
 - a. The listed pollutant poses a substantial threat to the health and safety of humans, aquatic life, or wildlife based on:
 - i. The number and type of designated uses impaired;
 - ii. The type and extent of risk from the impairment to human health, aquatic life, or wildlife;
 - iii. The pollutant causing the impairment, or
 - iv. The severity, magnitude, and duration the surface water quality standard was exceeded;
 - b. A new or modified individual NPDES or AZPDES permit is sought for a new or modified discharge to the impaired water;
 - c. The listed surface water or segment is listed as a unique water in A.A.C. R18-11-112 or is part of an area classified as a "wilderness area," "wild and scenic river," or other federal or state special protection of the water resource;
 - d. The listed surface water or segment contains a species listed as threatened or endangered under the federal Endangered Species Act and the presence of the pollutant in the surface water or segment is likely to

jeopardize the listed species;

e. A delay in conducting the TMDL could jeopardize the Department's ability to gather sufficient credible data necessary to develop the TMDL;

f. There is significant public interest and support for the development of a TMDL;

g. The surface water or segment has important recreational and economic significance to the public; or

h. The pollutant is listed for eight years or more.

2. Consider an impaired surface water or segment a medium priority if:

a. The surface water or segment fails to meet more than one designated use;

b. The pollutant exceeds more than one surface water quality standard;

c. A surface water quality standard exceedance is correlated to seasonal conditions caused by natural events, such as storms, weather patterns, or lake turnover;

d. It will take more than two years for proposed actions in the watershed to result in the surface water attaining applicable water quality standards;

e. The type of pollutant and other factors relating to the surface water or segment make the TMDL complex; or

f. The administrative needs of the Department, including TMDL schedule commitments with EPA, permitting requirements, or basin priorities that require completion of the TMDL.

3. Consider an impaired surface water or segment a low priority if:

a. The Department has formally submitted a proposal to delist the surface water, segment, or pollutant to EPA based on R18-11-605(E)(2). If the Department makes the submission outside the listing process cycle, the change in priority ranking will not be effective until EPA approves the submittal;

b. The Department has modified, or formally proposed for modification, the designated use or applicable surface water quality standard, resulting in an impaired water no longer being impaired, but the modification has not been approved by EPA;

c. The surface water or segment is expected to attain surface water quality standards due to any of the following:

- i. Recently instituted treatment levels or best management practices in the drainage area,
- ii. Discharges or activities related to the impairment have ceased, or
- iii. Actions have been taken and controls are in place or scheduled for implementation that will likely to bring the surface water back into compliance;

d. The surface water or segment is ephemeral or intermittent. The Department shall re-prioritize the surface water or segment if the presence of the pollutant in the listed water poses a threat to the health and safety of humans, aquatic life, or wildlife using the water, or the pollutant is contributing to the impairment of a downstream perennial surface water or segment;

e. The pollutant poses a low ecological and human health risk;

f. Insufficient data exist to determine the source of the pollutant load;

g. The uncertainty of timely coordination with national and international entities concerning international waters;

h. Naturally occurring conditions are a major contributor to the impairment; and

- i. No documentation or effective analytical tools exist to develop a TMDL for the surface water or segment with reasonable accuracy.

C. The Department will target surface waters with high priority factors in subsections (B)(1)(a) through (B)(1)(d) for initiation of TMDLs within two years following EPA approval of the 303(d) List.

D. The Department may shift priority ranking of a surface water or segment for any of the following reasons:

1. A change in federal, state, or tribal policies or priorities that affect resources to complete a TMDL;
2. Resource efficiencies for coordinating TMDL development with other monitoring activities, including the Department's ambient monitoring program that monitors watersheds on a 5-year rotational basis;
3. Resource efficiencies for coordinating TMDL development with Department remedial or compliance programs;
4. New information is obtained that will revise whether the surface water or segment is a high priority based on factors in subsection (B); and
5. Reduction or increase in staff or budget involved in the TMDL development.

E. The Department may complete a TMDL initiated before July 12, 2002 for a surface water or segment that was listed as impaired on the 1998 303(d) List but does not qualify for listing under the criteria in R18-11-605, if:

1. The TMDL investigation establishes that the water quality standard is not being met and the allocation of loads is expected to bring the surface water into compliance with standards,
2. The Department estimates that more than 50 percent of the cost of

completing the TMDL has been spent,

3. There is community involvement and interest in completing the TMDL, or

4. The TMDL is included within an EPA-approved state workplan initiated before July 12, 2002.

Table 1. [Planning List] Minimum Number of Samples Exceeding the Numeric Standard

Number of Samples		Number of Samples Exceeding Standard	Number of Samples		Number of Samples Exceeding Standard	Number of Samples		Number of Samples Exceeding Standard
From	To		From	To		From	To	
10	15	3	182	190	23	368	376	43
16	23	4	191	199	24	377	385	44
24	31	5	200	208	25	386	395	45
32	39	6	209	218	26	396	404	46
40	47	7	219	227	27	405	414	47
48	56	8	228	236	28	415	423	48
57	65	9	237	245	29	424	432	49
66	73	10	246	255	30	433	442	50
74	82	11	256	264	31	443	451	51
83	91	12	265	273	32	452	461	52
92	100	13	274	282	33	462	470	53
101	109	14	283	292	34	471	480	54
110	118	15	293	301	35	481	489	55
119	126	16	302	310	36	490	499	56
127	136	17	311	320	37	500		57
137	145	18	321	329	38	See calculation in R18-11-605.C.1.b.ii if dataset is larger than 500 samples.		
146	154	19	330	338	39			
155	163	20	339	348	40			
164	172	21	349	357	41			
173	181	22	358	367	42			

Table 2. [Impaired Waters] Minimum Number of Samples Exceeding the Numeric Standard

MINIMUM NUMBER OF SAMPLES EXCEEDING THE NUMERIC STANDARD								
Number of Samples		Number of Samples Exceeding Standard	Number of Samples		Number of Samples Exceeding Standard	Number of Samples		Number of Samples Exceeding Standard
From	To		From	To		From	To	
20	25	5	183	191	25	362	370	45
26	32	6	192	199	26	371	379	46
33	40	7	200	208	27	380	388	47
41	47	8	209	217	28	389	397	48
48	55	9	218	226	29	398	406	49
56	63	10	227	235	30	407	415	50
64	71	11	236	244	31	416	424	51
72	79	12	245	253	32	425	434	52
80	88	13	254	262	33	435	443	53
89	96	14	263	270	34	444	452	54
97	104	15	271	279	35	453	461	55
105	113	16	280	288	36	462	470	56
114	121	17	289	297	37	471	479	57
122	130	18	298	306	38	480	489	58
131	138	19	307	315	39	490	498	59
139	147	20	316	324	40	499	500	60
148	156	21	325	333	41	See calculation in R18-11-605.D.1.b.ii if dataset is larger than 500 samples.		
157	164	22	334	343	42			
165	173	23	344	352	43			
174	182	24	353	361	44			

APPENDIX C. Arizona's Surface and Ground Water Quality Standards

SELECTED ARIZONA SURFACE WATER QUALITY NUMERIC STANDARDS (excluding VOCs, SOCs, and pesticides not used in this assessment) Standards revisions adopted in 2002 shown as <i>bold and italics</i> .				
PARAMETER		DESIGNATED USE(S)	STANDARD OR ASSESSMENT CRITERIA	CHRONIC STANDARDS New methods to assess chronic standard violations
Ammonia (NH ₃)		A&Wc/A&Ww	Standard varies by pH., see table in standards.	<i>New standard, varies by temperature and pH</i>
Antimony (Sb)	dissolved	A&Wc/A&Ww A&Wedw	88 µg/L 1,000 µg/L	30 µg/L 600 µg/L
	total	DWS FBC/PBC FC	6 µg/L 560 µg/L 4,300 µg/L	NA
Arsenic (As)	dissolved	A&Wc/A&Ww/A&Wedw A&We	360 µg/L 440 µg/L	190 µg/L NA
	total	DWS/FBC AGL PBC FC AGI People's Canyon Creek (Unique Waters)	50 µg/L 200 µg/L 420 µg/L 1450 µg/L 2,000 µg/L 20 µg/L	NA
Barium (Ba)	dissolved	FBC/PBC	98,000 µg/L	NA
	total	DWS	2,000 µg/L	
Beryllium (Be)	dissolved	A&Wc/A&Ww/A&Wedw	65 µg/L	5.3 µg/L
	total	DWS FC PBC/FBC	4 µg/L 1,130 µg/L 2,800 µg/L	NA NA NA
Boron (B)	total	DWS AGI FBC/PBC	630 µg/L 1,000 µg/L 126,000 µg/L	NA
Cadmium (Cd)	dissolved	A&W	<i>Standard varies by water hardness*, see published standards.</i>	<i>Standard varies by hardness*, see published standards.</i>
	total	DWS FC AgI/AgL FBC/PBC	5 µg/L 84 µg/L 50 µg/L 700 µg/L	NA
Chlorine (total residual) (Cl)		A&Wc/A&Ww/A&Wedw DWS FBC/PBC	11 ug/L 700 µg/L 140,000 µg/L	5 ug/L

SELECTED ARIZONA SURFACE WATER QUALITY NUMERIC STANDARDS (excluding VOCs, SOCs, and pesticides not used in this assessment) Standards revisions adopted in 2002 shown as bold and <i>italics</i> .			
PARAMETER	DESIGNATED USE(S)	STANDARD OR ASSESSMENT CRITERIA	CHRONIC STANDARDS New methods to assess chronic standard violations
Chromium (Cr)	dissolved	Unique Waters standards for: West Fork Little Colorado River, above Government Springs Oak Creek and West Fork Oak Creek 10 µg/L 5 µg/L	
	total	DWS/FBC/PBC Agl/Agl 100 µg/L 1,000 µg/L	NA
Chromium III (Cr III)	dissolved	A&Ww/A&Wc/A&We/A&Wedw <i>Standard varies by water hardness*, see published standards.</i>	<i>Standard varies by hardness*, see published standards.</i>
	total	DWS FC FBC/PBC 10,500 µg/L 1,010,000 µg/L 2,100,000 µg/L	NA
Chromium VI (Cr VI)	dissolved	A&Wc/A&Ww/A&Wedw/ A&We 16 µg/L 34 µg/L	11 µg/L NA
	total	DWS FC FBC/PBC 21 2,000 µg/L 4,200 µg/L	NA
Copper (Cu)	dissolved	A&Ww/A&Wc/A&We/A&Wedw <i>Standard varies by water hardness*, see published standards.</i>	<i>Standard varies by hardness*, see published standards.</i>
		Rio de Flag below WWTP outfall 36 µg/L	
	total	Agl DWS/FBC/PBC Agl 500 µg/L 1,300 µg/L 5,000 µg/L	NA
Cyanide (Cn)	total	A&Wc A&Ww/A&Wedw A&We Agl, DWS FBC/PBC FC 22 µg/L 41 µg/L 84 µg/L 200 µg/L 28,000 µg/L 215,000 µg/L	5.2 µg/L 9.7 µg/L NA
Dissolved Oxygen (DO)		A&Ww A&Wc A&Wedw >6.0 mg/L >7.0 mg/L Applies 3 hours after sunrise to sunset >3.0 mg/L Applies sunset to 3 hours after sunrise >1.0 mg/L note: in compliance if % saturation is = or > 90%	
		West Fork Little Colorado (Unique Waters) Peoples Canyon Creek (Unique Waters) Cienega Creek (Unique Waters) Bonita Creek (Unique Waters) no decrease due to discharge	

SELECTED ARIZONA SURFACE WATER QUALITY NUMERIC STANDARDS (excluding VOCs, SOCs, and pesticides not used in this assessment) Standards revisions adopted in 2002 shown as <i>bold and italics</i> .				
PARAMETER		DESIGNATED USE(S)	STANDARD OR ASSESSMENT CRITERIA	CHRONIC STANDARDS New methods to assess chronic standard violations
DDE (metabolite of DDT) p,p'-Dichlorodiphenyldichloroethylene		AgI, AgL, FC DWS A&Wc A&Ww, A&Wedw A&We FBC/PBC	0.001 0.1 1.1 µg/L 1.1 µg/L 1.1 µg/L 4.1	-- -- 0.001 0.02 -- --
Escherichia coli		FBC PBC	<i>geometric mean (4 sample minimum) = 126 CFU/100ml</i> <i>single sample maximum = 235 CFU/100ml</i> <i>geometric mean (4 sample minimum) = 126 CFU/100ml</i> <i>single sample maximum = 576 CFU/100ml</i>	
Fluoride (F)		DWS FBC/PBC	4,000 µg/L (4 mg/L) 84,000 µg/L (84 mg/L)	NA
Lead (Pb)	dissolved	A&Ww/A&Wc/A&We/A&Wedw	<i>Standard varies by water hardness*, see published standards.</i>	<i>Standard varies by hardness*, see published standards.</i>
	total	DWS/ FBC/PBC AgL AgI	15 µg/L 100 µg/L 10,000 µg/L	NA
Manganese (Mn)		DWS AgI FBC/PBC Unique Waters standards for: People's Canyon Creek, Burro Creek, and Francis Creek	980 µg/L 10,000 µg/L 196,000 µg/L 500 µg/L	NA
Mercury (Hg)	dissolved	A&Wc/A&Ww A&Wedw A&We	2.4 µg/L 2.6 µg/L 5.0 µg/L	0.01 µg/L 0.2 µg/L NA
	total	FC DWS AgL FBC/PBC	0.6 µg/L 2 µg/L 10 µg/L 420 µg/L	NA
Nickel (Ni)	dissolved	A&W	<i>Standard varies by water hardness*, see published standards.</i>	<i>Standard varies by hardness*, see published standards.</i>
	total	DWS FC FBC/PBC	140 µg/L 4,600 µg/L 28,000 µg/L	
Nitrate (as nitrogen) (NO3)		DWS mean value San Pedro (Curtiss-Benson) FBC/PBC	10,000 µg/L (10 mg/L) 10,000 µg/L (10 mg/L) 2,240,000 µg/L (2,240 mg/L)	NA
Nitrate/Nitrite (as nitrogen) (NO3/NO2)		DWS	10,000 µg/L (10 mg/L)	

SELECTED ARIZONA SURFACE WATER QUALITY NUMERIC STANDARDS (excluding VOCs, SOCs, and pesticides not used in this assessment) Standards revisions adopted in 2002 shown as bold and <i>italics</i> .				
PARAMETER		DESIGNATED USE(S)	STANDARD OR ASSESSMENT CRITERIA	CHRONIC STANDARDS New methods to assess chronic standard violations
Nitrite (as nitrogen) (NO2)		DWS FBC/PBC	1,000 µg/L (1 mg/L) 140,000 µg/L (140 mg/L)	NA
Nitrogen (N)	total	See nutrient chart below		
pH		A&W/FBC/PBC/AgL DWS AgI All waters except Unique Waters Unique Water standards for: Bonita Creek, Cienega Creek, West Fork Little Colorado, Oak Creek, and West Fork Oak Creek	6.5 - 9.0 5.0 - 9.0 4.5 - 9.0 Maximum change due to discharge = 0.5 No change due to discharge	
Phosphorus (P)	total	See nutrient chart below		
Selenium (Se)	total	A&Ww/A&Wc AgL A&We A&Wedw AgL/DWS FBC/PBC FC	20 µg/L 20 µg/L 33 µg/L 50 µg/L 50 µg/L 7,000 µg/L 9,000 µg/L	2 µg/L NA NA 2 µg/L NA NA NA
Silver (Ag)	dissolved	A&Ww/A&Wc/A&We/A&Wedw	<i>Standard varies by water hardness*, see published standards.</i>	<i>Standard varies by hardness*, see published standards.</i>
	total	DWS FBC/PBC FC	35 µg/L 7,000 µg/L 107,700 µg/L	NA
Suspended Sediment Concentration		A&Wc, A&Ww	<i>Geometric mean (4 sample minimum) of samples at or near base flow</i> 80 mg/L	
Sulfides (S2)		A&W	100 µg/L(0.1 mg/L) <i>applies only in upper layer in a lake</i>	NA
Temperature (maximum increase due to discharge)		A&Wc A&Ww/A&Wedw Unique Water standards for: Bonita Creek, Cienega Creek, West Fork Little Colorado, and People's Canyon	1.0 ° C 3.0 ° C no increase due to discharge	NA
Thallium (Tl)	dissolved	A&Wc/A&Ww/A&Wedw	700 µg/L	150 µg/L
	total	DWS FC FBC/PBC	2 µg/L 7.2 µg/L 112 µg/L	NA

SELECTED ARIZONA SURFACE WATER QUALITY NUMERIC STANDARDS (excluding VOCs, SOCs, and pesticides not used in this assessment) Standards revisions adopted in 2002 shown as bold and italics .				
PARAMETER		DESIGNATED USE(S)	STANDARD OR ASSESSMENT CRITERIA	CHRONIC STANDARDS New methods to assess chronic standard violations
Total Dissolved Solids (TDS)		Colorado River: below Hoover Dam below Parker Dam at Imperial Dam	NA	(flow-weighted average annual) 723 mg/L 747 mg/L 879 mg/L
		Unique Water standards for: West Fork Little Colorado River, Bonita Creek, & Cienega Creek	no increase due to discharge	NA
Turbidity		Oak Creek (Unique Waters)Peoples Canyon Creek (Unique Waters) Cienega Creek (Unique Waters) Bonita Creek (Unique Waters)	3 NTU change due to discharge 5 NTU change due to discharge 10 NTU 15 NTU	NA
		Former standards: A&Wc (lakes and streams) A&Ww (lakes) A&Ww and A&Wedw (streams)	Former standards 10 NTU 25 NTU 50 NTU	
Uranium (Ur)	dissolved	DWS	35 µg/L	NA
Zinc (Zn)	dissolved	A&Ww/A&Wc/A&We/A&Wedw	<i>Standard varies by water hardness*, see published standards.</i>	<i>Standard varies by hardness*, see published standards.</i>
	total	DWS Agl Agl FC FBC/PBC	2,100 µg/L 10,000 µg/L 25,000 µg/L 69,000 µg/L 420,000 µg/L	NA

*Dissolved metal standards are calculated using equations published with the surface water standards. In these equations, hardness (expressed as CaCO₃) cannot exceed 400 mg/L; therefore, use 400 mg/L hardness if result is greater than 400 mg/L.

SURFACE WATER QUALITY STANDARDS FOR RADIOCHEMICALS		
Radiochemical	Designated Use	Standard (mean value)
Gross Alpha (excluding radon and uranium)	DWS	15 pCi/L
Radium-226 + Radium-228	DWS	5 pCi/L
Strontium 90	DWS	8 pCi/L
Tritium	DWS	20,000 pCi/L

SURFACE WATER QUALITY NUTRIENT STANDARDS			
WATERSHED OR SITE SPECIFIC LOCATION	Annual Mean	90th Percentile	Single Sample Max
Verde River and tributaries – above Bartlett Lake	Phosphorus 0.10 mg/L Nitrogen 1.00 mg/L	Phosphorus 0.30 mg/L Nitrogen 1.50 mg/L	Phosphorus 1.00 mg/L Nitrogen 3.00 mg/L
Oak Creek including West Fork (in Verde Watershed) (Unique Waters standard)	Phosphorus 0.10 mg/L Nitrogen 1.00 mg/L	Phosphorus 0.25 mg/L Nitrogen 1.50 mg/L	Phosphorus 0.30 mg/L Nitrogen 2.50 mg/L
Black River, Tonto Creek and their tributaries (in Salt Watershed)	Phosphorus 0.10 mg/L Nitrogen 0.50 mg/L	Phosphorus 0.20 mg/L Nitrogen 1.00 mg/L	Phosphorus 0.80 mg/L Nitrogen 2.00 mg/L
Salt River and tributaries (except Pinal Creek) -- from confluence of Black and White to Roosevelt Lake	Phosphorus 0.12 mg/L Nitrogen 0.60 mg/L	Phosphorus 0.30 mg/L Nitrogen 1.20 mg/L	Phosphorus 1.00 mg/L Nitrogen 2.00 mg/L
Salt River – below Stewart Mtn. Dam to confluence w/Verde River	Phosphorus 0.05 mg/L Nitrogen 0.60 mg/L	Phosphorus NNS Nitrogen NNS	Phosphorus 0.20 mg/L Nitrogen 3.00 mg/L
Roosevelt, Apache, Canyon, and Saguaro Lakes (composites at 2- and 5-meter depth)	Phosphorus 0.03 mg/L Nitrogen 0.30 mg/L	Phosphorus NNS Nitrogen NNS	Phosphorus 0.60 mg/L Nitrogen 1.00 mg/L (maximum of any set)
Little Colorado River and tributaries – above River Reservoir, in Greer; So Fork LCR – above South Fork Campground; and Water Canyon Creek –above USFS boundary	Phosphorus 0.08 mg/L Nitrogen 0.60 mg/L	Phosphorus 0.10 mg/L Nitrogen 0.75 mg/L	Phosphorus 0.75 mg/L Nitrogen 1.10 mg/L
Little Colorado River -- at Apache County Road No 124	Phosphorus NNS Nitrogen NNS	Phosphorus NNS Nitrogen NNS	Phosphorus 0.75 mg/L Nitrogen 1.80 mg/L
Little Colorado River -- from Amity Ditch diversion near AZ Hwy 273 to Lyman Lake (only when < 50 NTU)	Phosphorus 0.20 mg/L Nitrogen 0.70 mg/L	Phosphorus 0.30 mg/L Nitrogen 1.20 mg/L	Phosphorus 0.75 mg/L Nitrogen 1.50 mg/L
Colorado River -- at Mexico/US Northern International Border near Morales Dam	Phosphorus NNS Nitrogen NNS	Phosphorus 0.33 mg/L Nitrogen 2.50 mg/L	Phosphorus NNS Nitrogen NNS
San Pedro River – from Curtis to Benson.	Phosphorus NNS Nitrogen NNS	Phosphorus NNS Nitrogen NNS	Phosphorus NNS Nitrate (as N) 10 mg/L

Narrative Water Quality Standards

Narrative Surface Water Quality Standards

R18-11-108 -- A surface water shall be free from pollutants in amounts or combinations that:

- Settle to form bottom deposits that inhibit or prohibit the habitation, growth, or propagation of aquatic life or that impair recreational uses (bottom deposits standard);
- Cause objectionable odor in the area in which the surface water is located;
- Cause off-taste or odor in drinking water;
- Cause off-flavor in aquatic organisms or waterfowl;
- Are toxic to humans, animals, plants or other organisms (toxics standard);
- Cause the growth of algae or aquatic plants that inhibit or prohibit the habitation, growth, or propagation of other aquatic life or that impair recreational uses (narrative nutrient standard);
- Cause or contribute to a violation of an aquifer water quality standard prescribed in R18-11-405 or R18-11-406; or
- Change the color of the surface water from natural background levels of color.

A surface water shall be free from oil, grease, and other pollutants that float as debris, foam, or scum; or that cause a film or iridescent appearance on the surface of the water; or that cause a deposit on a shoreline, bank, or aquatic vegetation. The discharge of lubricating oil or gasoline associated with the normal operation of a recreational water-craft shall not be considered a violation of this narrative standard.

Narrative Aquifer Water Quality Standards

R18-11-405:

- A discharge shall not cause a pollutant to be present in an aquifer classified for a drinking water protected use in a concentration which endangers human health.
- A discharge shall not cause or contribute to a violation of a water quality standard established for a navigable water of the state.
- A discharge shall not cause a pollutant to be present in an aquifer which impairs existing or reasonably foreseeable uses of water in an aquifer.

Arizona's Numeric Aquifer Water Quality Standards

ARIZONA'S GROUND WATER STANDARDS FOR INORGANIC CHEMICALS	
CONTAMINANT NAME (ABBREVIATION, TRADE OR GENERIC NAME)	AQUIFER WATER QUALITY STANDARDS (µg/L unless stated)
Antimony (Sb)	6
Arsenic (As)	50
Asbestos	7,000,000 fibers/Liter (longer than 10 µm)
Barium (Ba)	2000
Beryllium (Be)	4
Cadmium (Cd)	5
Chromium (total) (Cr)	100
Cyanide (Cn)	200 (as free cyanide)
Fluoride (F)	4 mg/L
Lead (Pb)	50
Mercury (Hg)	2
Nickel (Ni)	100
Nitrate (NO ₃ as N)	10.0 mg/L
Nitrite (NO ₂ as N)	1.0 mg/L
Nitrate + Nitrite (as N)	10 mg/L
Selenium (Se)	50
Thallium (Tl)	2

ARIZONA'S GROUND WATER STANDARDS FOR ORGANIC CHEMICALS, PESTICIDES, PETROLEUM HYDROCARBONS, AND POLYCHLORINATED BIPHENYL (PCBs)	
CONTAMINANT NAME (ABBREVIATION, TRADE OR GENERIC NAME)	AQUIFER WATER QUALITY STANDARDS (µg/L unless stated)
Alachlor (Lasso)	2
Atrazine (Atranex, Crisazina)	3
Benzene	5
Benzo(a)pyrene	0.2
Carbofuran (Furadan 4F)	40
Carbon tetrachloride (Freon-10)	5
Chlordane	2
2,4-D (Formula 40, Weedar 64) 2,4-Dichlorophenoxyacetic Acid	70
Dalapon or 2,2-Dichloropropionic acid	200
Dibromochloromethane (DBCM or THM)	0.2
Dibromochloropropane (DBCP)	0.2
Dichlorobenzene (DCB)	o-DCB = 600 p-DCB = 75
Dichloroethane (DCA)	1,2-DCA = 5
Dichloroethylene or Dichloroethene (DCE)	1,1-DCE = 7 cis-1,2-DCE = 70 trans-1,2-DCE = 100
Dichloromethane	5
Dichloropropane	1,2-DCP = 5
Di(2-ethylhexyl)adipate (DOA)	400
Di(2-ethylhexyl)phthalate (DOP)	6
Dinoseb 2,4-Dinitro-6-sec-butyl-phenol (DNBP)	7
Dioxin 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	0.00003
Diquat or Dihydrodipyrido-pyrazidinium salt	20

ARIZONA'S GROUND WATER STANDARDS FOR ORGANIC CHEMICALS, PESTICIDES, PETROLEUM HYDROCARBONS, AND POLYCHLORINATED BIPHENYL (PCBs)	
CONTAMINANT NAME (ABBREVIATION, TRADE OR GENERIC NAME)	AQUIFER WATER QUALITY STANDARDS (µg/L unless stated)
Endothall or Oxalobicyclo-heptane-dicarboxylic acid disodium salt	100
Endrin or Hexachloroepoxyoctahydro-endo-dimethanonaphthalene	2
Ethylene dibromide (EDB)	0.05
Ethylbenzene (ETB)	700
Glyphosate or N-(phosphonomethyl)glycine	700
Heptachlor	0.4
Heptachlor epoxide	0.2
Hexachlorobenzene or Perchlorobenzene	1
Hexachlorocyclopentadiene or Perchlorocyclopentadiene	50
Lindane or gamma-Benzene hexachloride	0.2
Methoxychlor (Methoxy DDT, DMDT)	40
Monochlorobenzene, or Chlorobenzene, or Phenyl chloride	100
Oxamyl	200
Perchloroethylene (PCE), Tetrachloroethylene or Tetrachloroethene	5
Pentachlorophenol	1
Picloram	500
Polychlorinated biphenyl (PCB)	0.5
Silvex 2-(2,4,5-Trichlorophenoxy)propionic acid	50
Simazine 2-Chloro-4,6-bis(ethylamino)-2-triazine	4
Styrene	100
1,2,4-Trichlorobenzene	70
Trichloroethane (TCA)	1,1,1-TCA = 200 1,1,2-TCA = 5
Trichloroethylene or Trichloroethene (TCE)	5

ARIZONA'S GROUND WATER STANDARDS FOR ORGANIC CHEMICALS, PESTICIDES, PETROLEUM HYDROCARBONS, AND POLYCHLORINATED BIPHENYL (PCBs)	
CONTAMINANT NAME (ABBREVIATION, TRADE OR GENERIC NAME)	AQUIFER WATER QUALITY STANDARDS (µg/L unless stated)
Toluene (TOL)	1000
Toxaphene	3
Vinyl chloride (VC)	2
Xylene (XYL)	10,000

ARIZONA'S GROUND WATER STANDARDS FOR RADIOCHEMICALS, PHYSICAL MEASUREMENTS, AND BACTERIA	
CONTAMINANT NAME (ABBREVIATION, TRADE OR GENERIC NAME)	AQUIFER WATER QUALITY STANDARDS (µg/L unless stated)
Beta particle + photon human-caused radionuclides	4 millirem/year
Gross alpha (include Radium-226, exclude radon and uranium)	15 pCi/L
Radium-226 + Radium-228	5 pCi/L
Strontium-90	4 millirem/year 8 pCi/L in bone marrow
Tritium	4 millirem/year 20,000 pCi/L in total body
Total coliform	0 per 100 ml
Turbidity	1 NTU monthly mean, 5 NTU (if 0 fecal coliform after chlorination), 5 NTU (2-day mean)

Surface water and aquifer protection standards are published in Arizona Administrative Code Title 18, Chapter 11 (R18-11-101 through R18-11-506).